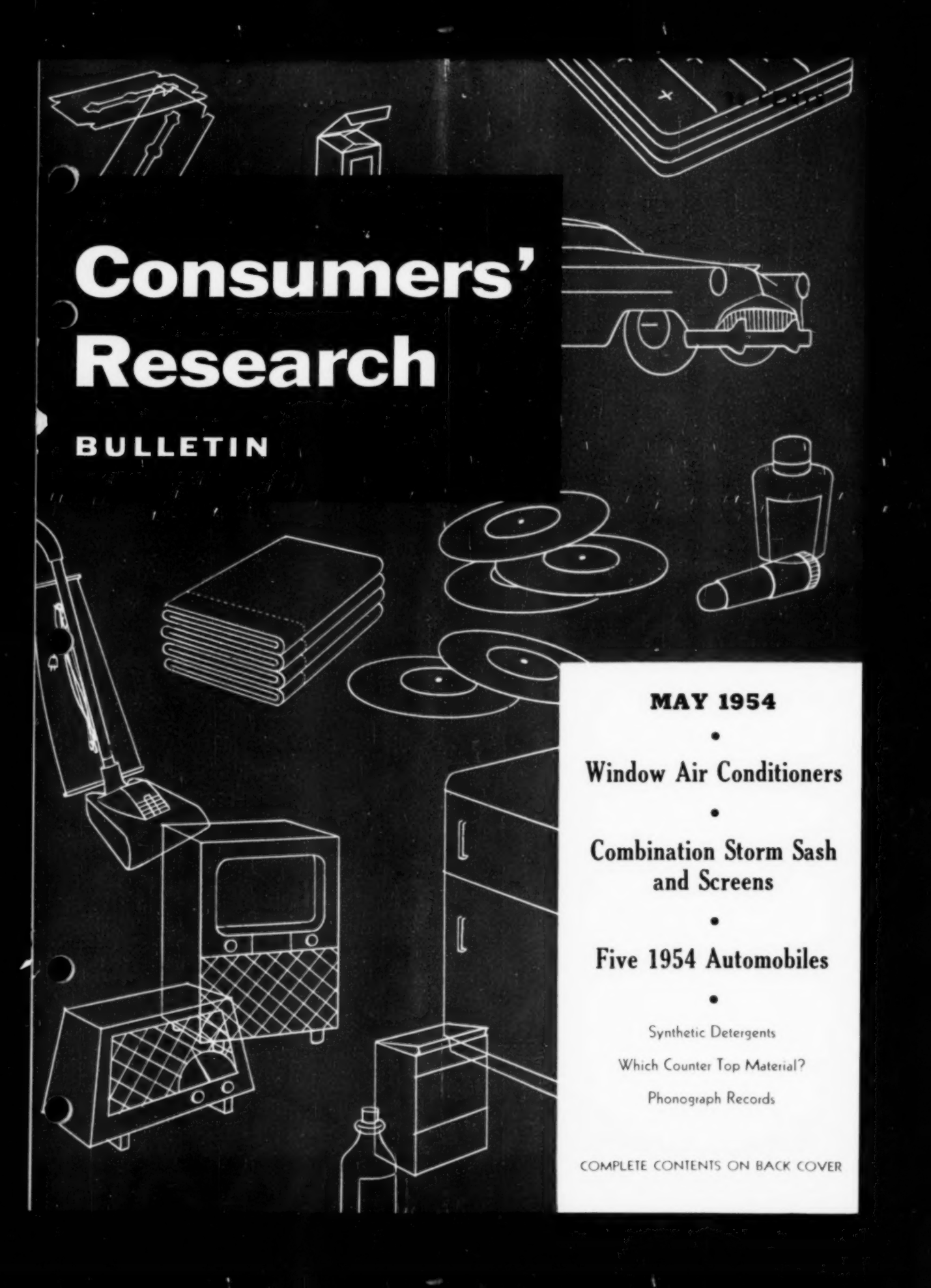

Consumers' Research

BULLETIN

MAY 1954

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Window Air Conditioners

•

Combination Storm Sash and Screens

•

Five 1954 Automobiles

•

Synthetic Detergents

Which Counter Top Material?

Phonograph Records

COMPLETE CONTENTS ON BACK COVER

Consumers' Research Bulletin

OFF THE EDITOR'S CHEST

WHY pay list price for a product when you can get it at a discount? is a state of mind that is apparently growing throughout the country. Trade magazines and newspapers discuss at great length the growing popularity of what are known as discount houses, which sell nearly everything at cut prices except food and clothing. Primarily the discount houses specialize in name-brand appliances, TV and radio sets, furniture, toys, wrist watches, cameras, and jewelry. Their prices range from 10 percent to 60 percent below manufacturers' retail list prices, even when such prices are fixed under the state statutes misleadingly named "fair trade laws." Although The Wall Street Journal recently indicated in a survey of the situation that new cut-rate outlets are springing up all over the country, it noted that there are a number of stores, such as Masters, Inc., and E. J. Korvette Co. of New York; Robinson's of Detroit, Michigan; National Procurement & Distributing Corp. of Chicago, that are well established in the field. Some such dealers correctly deny that any disrepute need be attached to the term "discount" and insist that they are simply competitive, passing on to the consumer the benefit of lower prices when they make good purchases and sell in good volume.

One of the favorite techniques for getting the word around to customers that is used by many discount houses is to issue identification cards that entitle the bearer to a "special rate" and distribute these cards to employees of large corporations, labor unions, church organizations, schools, and other groups. One irate trade journal complains that labor unions which cooperate in cut-rate discount selling of merchandise are violating "all the ethics of modern unionism" since "the labor union has now moved to the point where in some fields it has achieved industry-wide setting of wage scales." The editor, oblivious to the interest of the public in the problem, makes the point that retail merchants also have *their* wage scale, which is "their established retail prices."

Resale price maintenance laws which are in effect in all states except Texas, Missouri, Vermont, and the District of Columbia empower manufacturers to fix the retail price below which their branded products may not be sold, and several large manufacturers have taken court action to restrain dealers who sell below list prices. Among the firms recently referred to in the

(*Continued on page 29*)

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Consumers' Research functions to provide unbiased information on goods bought by ultimate consumers. For their benefit (not for business or industry) and solely with the funds they provide, CR carries on tests and research on a wide variety of goods, materials, and appliances, and publishes the findings in CR Bulletin. Consumers' Research is a non-profit institution, and is organized and operates as a scientific, technical, and educational organization.

Scientific and Technical Staff and Editors: F. J. Schlink, R. Joyce, D. C. Aten, M. C. Phillips, Erma A. Hinek, F. X. Hinek, and A. R. Greenleaf. Editorial Assistants: Mary F. Roberts and B. Beam. Business Manager: C. D. Cornish.

Symbols used to indicate sources of data and bases of ratings: **A**—recommended on basis of quality; **AA**—regarded as worthy of highest recommendation; **B**—intermediate with respect to quality; **C**—not recommended on basis of quality; cr—information from Consumers' Research's own tests or investigations; **1, 2, 3**—relative prices, **1** being low, **3** high. Note that price and quality are completely differentiated in CR's listings; **a quality judgment is independent of price**; 53, 54—year in which test was made or information obtained or organized by the staff of Consumers' Research.

It will be advantageous if you will, whenever possible, send prompt notice of change of address at least 8 weeks before it is to take effect, accompanying your notice with statement of your old address with name in full. At least a month's notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel. **CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.*

★★★For a convenient cumulative index of the 1954 BULLETINS preceding this issue, see page 30.

CONSUMERS' RESEARCH BULLETIN, issued monthly by Consumers' Research, Inc. Editorial and Publication Offices at **Washington, N. J.**

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The Consumers' Observation Post

COFFEE'S HIGH PRICE has been the subject of much discussion in recent weeks. There has been a steady rise in wholesale prices since news arrived last July that heavy frost had nipped coffee buds in Brazil, which supplies 50 percent of U.S. coffee imports. Added to the problems posed by the crop shortage is the increase in world consumption as countries hard hit by World War II achieve economic stability. Since it takes about five years to bring newly planted coffee trees to the bearing stage, the probabilities are that the price of coffee will be high for some time to come.

* * *

EXCELLENT ADVICE TO GARDEN CLUBS appears in the February Bulletin of the Santa Barbara Better Business Bureau. In a discussion of fraudulent horticultural advertising, the Bulletin suggests that garden clubs can render a great service if their members when they have been victimized by misleading advertising send a letter of complaint to the advertising medium which first carried the offer, to the firm in question, to the postal inspector at the city post office of the company's home city, and to their Better Business Bureau. If the offer carried a money-back guarantee, the B.B.B. recommends registering the letter demanding a refund, and if nothing is received in 10 days, reporting the matter to the Postmaster General's office in Washington, D.C. The Bulletin urges the victimized consumer not to feel cheap in asking for his money back for "if you don't do it, you are really aiding and abetting a thief" and wisely points out that if a great many complain "the thief goes broke and the game stops."

* * *

HOUSEHOLD CHEMICAL SPECIALTIES, cleaning and polishing agents, disinfectants, pesticides, and laundry materials are suspected of causing an increase in cases of accidental poisoning in the home, particularly among children. The American Medical Association has called a conference to explore methods of combating the dangers involved in potentially poisonous household products, at which it is expected also to emphasize the need for toxicology in the medical curriculum and a more informing death certificate as a statistical yardstick in dealing with the problem.

* * *

WHEN COLOR TELEVISION becomes a commercial reality, the packages of many advertisers will need to be redesigned for effective appearance on the screen. According to a color specialist of a well-known advertising firm, bright and contrasting colors which are fine for store display will be bad on television because the color TV camera cannot handle them. He pointed out that a wide range of contrasting colors produced what he referred to as "halations, blooms, and flares," and other difficulties. In a word, a whole new study of colors in packaging will be required to discover just what is "telegenic." There are other confusing problems connected with color TV, for it seems consumers are mixed up about the term "compatible" and think it means convertible and are asking dealers about converting their black and white sets. Perhaps it will be helpful for those who are interested to send for the little booklet, The Facts About Color Television, available from the National Better Business Bureau, Chrysler Building, New York 17.

* * *

FROZEN ORANGE JUICE has steadily decreased in price since the start of the current season when the warehouse quotation was $2.11 a dozen cans. When the U. S. Department of Agriculture revised its early estimate of the current Florida crop upward, the warehouse price dropped to $1.59 a dozen in February 1954. There has been a reduction in the retail price also.

CHARGES FOR ALTERATIONS of ready-made garments have been customary in the women's field for many years. Now this item of expense in buying a new suit is making its appearance in the men's field. Stores have discovered that their present margin of profit on men's suits does not cover the cost of operating an alterations department, and they are faced with the problem of raising the price of men's suits or charging for alterations. Some idea of what alterations will cost is found in a schedule of charges of the J.W. Robinson Company of Los Angeles considered moderate by the trade: raise or shorten back, $3.50; shorten coat, $3.50; take in shoulders and reset sleeves, $5; raise patch pockets and shorten coat, $5; extra pockets, $1.50; etc.; the charge for combined alterations is not to exceed $10. It is said that every effort will be made by most stores to fit a customer with a suit that requires little or no alteration.

* * *

IN MAKING A SOLUTION OF SODIUM BICARBONATE it is important to use tepid, not hot, water. As Dr. Erwin Di Cyan of Di Cyan & Brown, New York City, points out in a recent issue of his Monthly Bulletin, sodium bicarbonate in hot water releases its carbon dioxide and thus becomes essentially a solution of sodium carbonate, a caustic, which is likely to irritate the mucous membranes of the mouth if the solution is used as a rinse.

* * *

AMERICAN DINNERWARE is not as popular with American consumers as U. S. potters could wish. Sales in 1953 fell considerably below those for the previous years of 1952 and 1951. Stiff competition and lower prices from Japan, the United Kingdom, and Germany are held responsible, according to The Wall Street Journal. The newspaper points out that much imported dinnerware is china or vitreous ware manufactured by a process that gives it a hard and non-absorbent body. The Japanese china sells for less than half the price of the American-made product and actually competes in price with domestic earthenware, a non-vitrified product. The U. S. industry's leaders are demanding import restrictions through higher tariff to counteract the price appeal of the imported dinnerware products.

* * *

FLUORIDATION OF MUNICIPAL WATER SUPPLIES uses various compounds. The least expensive are the powdered sodium fluoride and sodium silicofluoride which, according to a report from the New York State Department of Health and Labor, create inhalation hazards and require toxic-dust control measures in plants where the chemicals are used. From New York State also comes word that a bill has been introduced in the Legislature which would require owners of public accommodations, hotels, boarding houses, etc., to advise patrons if the drinking water they serve is fluoridated.

* * *

SOUND ADVICE FOR HOME GARDENERS comes from John W. Kuzmeski of the Massachusetts Agricultural Experiment Station on the subject of garden fertilizers. He points out that fertilizers are required by law to show guarantees of nitrogen, available phosphoric acid, and potash, and notes that the effectiveness of these elements in promoting plant growth is the same regardless of the name of the fertilizer, provided the guaranteed amounts are supplied. He reports that it is more economical to buy the larger-sized packages and warns against being misled by claims that one pound of a particular product will make so many gallons of liquid fertilizer, pointing out that one pound of sugar will make several gallons of sweetened water, but the food value of the solution will still be equivalent only to that of one pound of sugar. It is Mr. Kuzmeski's observation that vitamins, hormones, and similar factors in fertilizers have no value for ordinary home garden use.

* * *

HELPFUL GENERAL ADVICE ON HOW TO BUY FABRICS for colorfastness and how to test for colorfastness will be found in two little booklets available

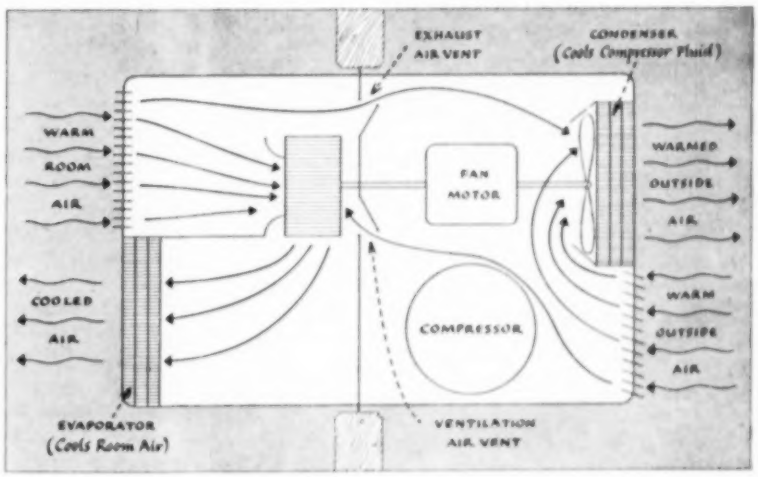
(The continuation of this section is on page 33)

Window Air Conditioners

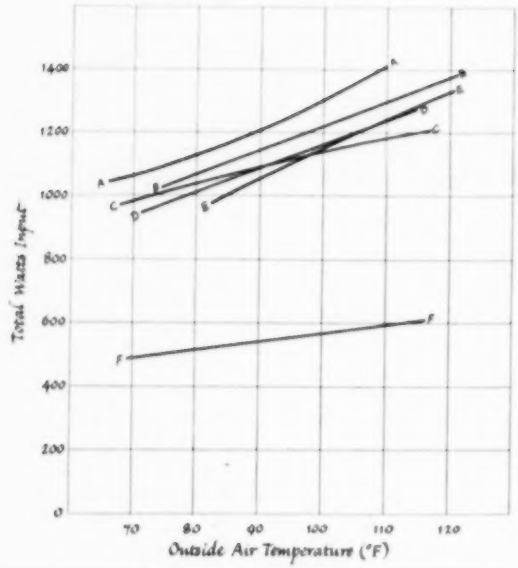
AMONG the most important factors in determining human comfort are temperature, relative humidity, and absence of objectionable gases and odors in the air. In the temperate zones, adequate comfort can normally be obtained in late spring, summer, and early fall by opening windows and doors and allowing atmospheric conditions indoors to be like those outside. During the rest of the year, comfort is obtained by use of one of the usual heating systems, which, when properly controlled, can maintain constantly a satisfactory degree of comfort in most parts of the home.

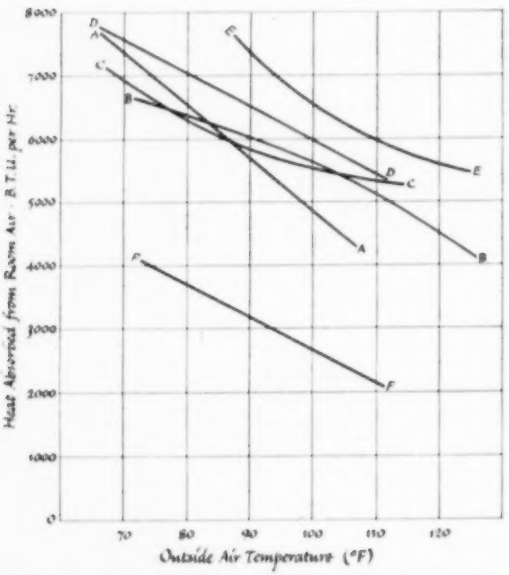
Hot summer weather presents a more difficult problem. There are many days during the summer when high temperatures outside make it expedient to keep doors and windows shut and shades or blinds drawn so that the house will not become too warm. Even then, however, it is almost impossible to keep inside temperatures down to a comfortable level during a protracted hot spell. Thus, in many sections of our country, people use refrigeration equipment to produce reasonably comfortable living or working conditions on the hottest and most humid days. In the past few years the window-type air conditioner has become the favorite appliance for this purpose, and has in the last year or two become one of the major appliances in point of sales dollars. Indeed, total sales for 1953 ran to about 800,000 room cooler units, with expectation of sales of about 1.3 million coolers in 1954.

The term air conditioning implies the simultaneous control by a mechanical device not only of *circulation* but also of the *temperature, moisture content,* and *quality* of the air within a structure. If any one of the first three basic functions is not performed, the device cannot properly be called an air-conditioning unit, but should be given a name that reflects the functions it actually *does* perform. Because people react differently to variations or differences in the several factors of comfort, it can readily be seen that any modern air-conditioning unit may be considered satisfactory or unsatisfactory depending on the conditions of use, the reactions of the persons passing judgment, and the particular set of conditions under which a person may feel reasonably comfortable. (Some, because of conditions of health or habituation, easily tolerate temperature and humidity conditions that others find exceedingly unpleasant.)



Sectional drawing of an air-conditioning unit showing in simplified form the manner of operation.





Graphs showing the electrical energy consumed (top) and heat absorbed (bottom) with changing outdoor temperatures ranging from 70 degrees to 120 degrees. Note that, unlike refrigerators, whose operating costs may vary by a 2 to 1 factor, the operating cost for any one unit over a summer period is not likely to vary significantly from the other units tested; the various makes did not show large differences in Btu output.

***A**—Philco, 3/4 hp.; **B**—Servel, 3/4 hp.; **C**—Carrier, 3/4 hp.; **D**—Vornado, 3/4 hp.; **E**—Fedders, 3/4 hp.; **F**—Fedders, 1/3 hp.*

On the basis of the test results, it seems quite likely that any one of the 5 larger units studied by Consumers' Research would provide comfortable living conditions in one or two rooms of a house during either a short or protracted hot spell. Just how large a space could be cooled and how much the temperature could be lowered with any given unit depends greatly on the building and its location in respect to the sun and to sources of reflected heat, such as other buildings, and hot pavements.

A salesman will often press his customer to buy a larger unit than may actually be needed. Consumers' Research has found that a single ¾-horsepower unit will add surprisingly to the comfort of a room even as large as 35 x 40 x 9 feet in very hot weather if conditions, as to sun exposure, are not too unfavorable, if there are no lamps burning, and no other sources of heat other than a few people working at desks. The room will not be as cool as many would desire, but will be definitely more livable, even though the capacity of such a cooling unit is only a fraction of what manufacturers would recommend for a space of the size named.

In order to determine whether a unit could be used to cool two rooms separated by a doorway, CR had a ¾-horsepower *Fedders* conditioner installed in a 12 x 12 foot study, separated from a 14½ x 18 foot bedroom by a short passageway with doors at both ends. With the passageway open, the unit cooled both rooms satisfactorily. While the bedroom temperature did not fall as fast as that in the study, the cooling effect could be speeded up by placing a fan on the floor of the study facing the bedroom. There was an actual advantage in the two-room arrangement in that the noise of air-conditioner operation was not in the bedroom. With this experience, CR believes a ⅓-horsepower unit should be a quite satisfactory means of mitigating summer temperatures in a room of moderate size and normal exposure.

Contrary to the manner in which one would like a unit to operate, the cooling capacity becomes less as the outdoor temperature increases. The capacity curves (Btu removed per hour versus outside air temperature [°F]) indicate that, for the conditions of the test, there was no great difference between the five ¾-horsepower units tested. The *Fedders* unit showed slightly higher capacity and the desirable characteristic of holding its capacity better at higher outdoor temperatures. The *Carrier* unit had slightly lower capacity at lower temperatures, but its capacity did not fall off as much as the *Philco's*, for example, as outdoor temperature was increased.

The capacity of the *Philco* was less than that of the other units with outside temperatures in the range above 90 degrees.

Wiring

One consideration of utmost importance in the installation of an air conditioner is the adequacy of the electric wiring in the home. While many ⅓-, ½-, and ¾-horsepower units are sold as appliances to be plugged into any ordinary wall electrical outlet, CR advises that a separate line be run from the main fuse panel for any unit of ½-horsepower capacity or larger. The smaller ⅓-horsepower models can be operated safely from the usual branch circuit outlet provided there are no other heavy loads connected to the circuit (say no more than 600 watts altogether). The ¾- and 1-horsepower units may normally be expected to take 1200 or more watts when running and, since the starting current is a good deal higher than the running current, difficulty may often be experienced with fuses blowing on a 115-volt branch circuit. There may be some fire hazard involved, besides, because the branch circuit wiring may not be of adequate size to carry the load satisfactorily, including lights, television receiver, or other equipment that may be plugged into the particular circuit at times. For this reason, and to reduce the fire hazard, CR does not recommend that units of ¾ horsepower and greater be run on 115 volts, 2-wire service; a 3-wire, 230-volt service is much to be preferred since it will offer better balance in the load demands on the wiring and will normally necessitate installation of a separate line to the conditioner.

There is also the problem of low line voltage in many apartment houses created by the rapidly increasing number of air-conditioning units and other electrical appliances installed, and it has often become necessary to install additional wiring to handle the load. Such alterations of wiring can be extremely expensive—far more so than if the heavier wiring had been installed when the building was built. Selection of the wire size and the type and value of fuse should be governed both by the manufacturer's data regarding the unit and by the National Board of Fire Underwriters' requirements, and by any local ordinance or code that is relevant.

Most 115-volt 2-wire service units are now available with either a 2-prong (blade) or 3-prong plug, depending upon local electrical code regulations. CR advises the purchase of the *3-blade* type and close supervision during installation so as to be sure the installer actually grounds the frame of the conditioner to a water pipe or other good and sure electrical ground through the third prong. The cabinet and metalwork of a 3-wire 230-volt unit should be grounded separately by the electrician, using permanent wiring for the ground connection.

Installation

Practically all of the window-type conditioners listed in the table are designed particularly for installation in an ordinary window (the kind known as the double-hung window). Most of the units listed could also be mounted permanently in a wall if desired, where cost is not an objection, so that window area would not be wasted and the amount of light into a room would not be cut down. If a choice is possible, the unit should be mounted on the north wall. East is next in desirability, then the south or west wall. (The cooling capacity of a room cooler is reduced by sun shining on the condenser coils and by the somewhat warmer air on the sunny south and west sides of a building.)

It is helpful to close curtains and Venetian blinds during the heat of the day so that as much of the sun's heat as possible is kept from inside the house. Awnings, shade trees, and shrubs tend to keep walls and rooms cooler and thus help greatly to reduce the cooling load on the air conditioner. It is expensive, relatively, to cool a room (compared with heating it by the same amount); thus any precautions taken to *reduce the cooling load* by keeping heat out of the house or the room will produce substantial savings in electricity, and besides will permit the temperature to be lowered by a greater amount, which may be very important on exceptionally hot days.

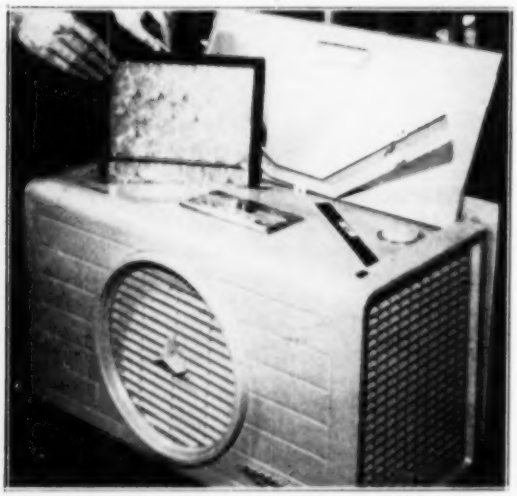
Functions of the Controls

Practically all of the window air conditioners now sold are designed to perform three functions. The primary function, of course, is to cool the air in the room in which they are installed. While normally this consists of recirculating only the room air (with all vents closed in the conditioner between the room and outdoor side), it is possible with most units to mix varying amounts of outside air with the air of the room. The user must realize, however, that the greater the amount of fresh—but hot—outside air brought in, the less will be the capacity of the unit to maintain a satisfactorily cool temperature in the room. A minor function of a conditioner is to serve as a ventilating fan only (with the compressor turned off). Normally, this consists of running the evaporator fan located in the room side which recirculates the air in the room and at the same time pulls in a small amount of outside air. A third function present on many

units is to exhaust the air in a room to the outside. Since the condenser fan is normally used for this, the rate of air removal from a room will really be very low, even though the total amount of air coming from the outside section of the conditioner may seem to be considerable (the condenser fan pulls warm outside air into the unit and ejects it again to the outside through the condenser coils). The air *exhausted from the room* will therefore only be a small proportion of the total air moved by this fan; its value in ventilation is therefore very slight.

A fourth function and one becoming increasingly popular in the latest models of air-conditioning units is to supply heat, necessarily small in amount, to a room on cool days. In some coolers, an ordinary electric resistance element is turned on and the evaporator fan circulates room air past it—thus delivering heat to the room. In others, the compressor is used "in reverse," and the unit functions as a so-called heat-pump. This method has the advantage that it extracts heat from the cooler outside air and thus brings this heat into the room. For this reason, the heat-pump method should offer an advantage in operating cost, provided the outside air temperature is not too low (not below about 40°F). (As the outside temperature decreases, the efficiency of a heat-pump will fall off, and in the temperature range between 32° and 40°F, frequent defrosting of the coils may be necessary.)

Many cooling units are equipped with a humidity control which tends to increase the dehumidifying action of the unit by lowering the effective temperature of the evaporator. This is usually accomplished by using the evaporator fan at the lower of two available speeds. It should be pointed out, however, that the air-cooling ability of the conditioner is reduced at the same time. Without a sufficient amount of relatively warm room air passing through the evaporator, the coils might collect frost (just as the evaporator in a refrigerator does), and room cooling would be greatly diminished. This condition can come about unintentionally in any air conditioner if the filters are not inspected and changed or cleaned frequently enough to maintain a free passage of air through the evaporator.



The filter should be readily available for inspection—and replacement when needed—as it is in the Fedders unit above.

Air-Filtering Efficiency

As mentioned elsewhere in this article, part of the function of an air conditioner is to filter the air passing through it. All units therefore employ either a replaceable or throwaway filter element, often composed of glass fibers, or one of metal which can be washed and re-oiled to restore its filtering properties.

This type of filter is claimed to remove most of the pollen from the air although it will likely be necessary to pass the air in the room through the filter several times to produce a satisfactorily low pollen count. There are indications that some tars present in the air due to the presence of smokers in the room are dissolved on the filters and may later on create an odor nuisance which will call for a change of the filter. Asthma sufferers and others subject to allergic disorders should be reminded that the cause of their disturbance may not be air-borne but that in many cases allergies are caused by certain kinds of foods. If it should be the case that food is the root of the trouble, one need expect no relief at all through use of an air conditioner.

Complete Home Conditioning Systems

During the past year CR has had a few inquiries for information on complete home air-conditioning plants which supply heat in the winter and cool the whole house in the summertime. There are indications that only a rather small percentage of the new homes being built are being equipped with whole-house cooling systems. This development is relatively new, and there are possibilities of a major financial loss to the home owner in the event that the many new problems encountered by the contractor in regard to insulation and moisture control are not solved with skill and intelligence or

if he is inexperienced in the field. CR advises subscribers not to invest in a whole-house cooling and heating system or a whole-house cooling system alone, unless they are prepared for the possibility of a substantial loss in case the design is poor, or the work badly executed. It is not a simple matter to install a whole-house cooling system, and many home owners have had serious troubles with the installations carried out by contractors who lacked technical knowledge and experience. The problem requires far more skill and training than installing a heating system, and it is advisable, therefore, to give the work only to a contractor who has already installed several systems over a period of two years or more; one should, moreover, talk to persons for whom he has done work to be sure that he is capable and uses competent workmen, and that his jobs have turned out well after a period of use.

Tests by Consumers' Research

Since there are now more than 60 manufacturers of air-conditioning units, and most manufacturers supply models in at least three different capacities, the choice of units to be tested was limited, for reasons of cost of the units and of the tests, to a few makes thought to be in widest sale or offered by those manufacturers (even though some of their output might be marketed under different brand names) who were believed to make the largest number of air conditioners. Three-quarter-horsepower units were chosen as being in widest sale, although one ½-horsepower unit was also tested to provide a comparison of performance and efficiency. Considering that a dependable report on 1954 models (not available till spring) could not have been published till the August or September issue, obviously long past the time when most subscribers would be interested in buying an air-conditioning unit, it was thought best to study 1953 models during the past winter, realizing that to a very considerable extent their performance would be similar to those of the succeeding year (since design is pretty well standardized and changes are likely to be in details rather than in basically important characteristics).

Briefly, the following tests were made: noise, starting and running current and energy consumption for one set of test conditions, the operating capacity of each unit under several different conditions of outside and room-air temperature, and measurements of air flow.

As was mentioned previously, the several units tested showed differences in performance under the test conditions applied, but the results indicated that no one unit was strikingly better than the others tested. The room-cooling capacity of all the units studied decreased to a marked extent as the outdoor temperature was increased, an undesirable effect, but one which is unavoidable with any make. All units tested were listed by Underwriters' Laboratories.

A. Recommended

Fedders, Model W39-G23 (Fedders-Quigan Corp.) $400. A ¾-hp. model rated at 9010 Btu per hour. 27 in. long x 27½ in. wide x 16½ in. high. *Tecumseh* compressor. Glass replaceable air filter. Starting amperes, 35; running amperes, 10.8. Room air circulation, 245 cu. ft. per minute; air velocity, 540 ft. per minute. High cooling capacity; relatively low operating cost.

B. Intermediate

Carrier, Model 51E3119 (Carrier Corp., Syracuse 1) $400. A ¾-hp. model rated at 9400 Btu output under standard test conditions. 26½ in. wide x 15 in. high x 34 in. deep; position may be adjusted in or out to give minimum projection into the room. Replaceable filter. *Copeland* compressor. Thermal overload protection on motors (desirable). Starting amperes, 24, relatively low, desirable; running amperes, 13. Room air circulation, 240 cu. ft. per minute; air velocity, 325-570 ft. per minute.

Fedders, Model W34-B21 (Fedders-Quigan Corp., Buffalo 7) $230. A ⅓-hp. model rated at 4175 Btu per hour under standard test conditions. 23 in. wide x 14 in. high x 27 in. deep. Blower-type evaporator fan (desirable for quiet operation). *Tecumseh* compressor. *Fiberglas* replaceable filter. Starting amperes, 22; running amperes, 6.3. Room air circulation, 156 cu. ft. per minute; air velocity, 450 ft. per minute, desirably low.

Philco, Model 84JL-2 (York Corp., Roosevelt and Smith Sts., York, Pa.) $400. A ¾-hp. model rated at 8400 Btu per hour. 36 in. long x 26 in. wide x 14½ in. high. *Fiberglas* replaceable filter. Motors had thermal overload protection. Starting amperes, 32; running amperes, 13. Room air circulation, 360 cu. ft. per minute; air velocity, 660-950 ft. per minute. *York* compressor.

Servel, Model RAC-93-1 (Servel Inc., Evansville 20, Ind.) $350. A ¾-hp. model rated at 8500 Btu per hour. 33 in. long x 27½ in. wide x 15 in. high. *Fiberglas* filter. Motors had thermal overload protection. Starting amperes, 35; running amperes, 11.2. Room air circulation, 250 cu. ft. per minute; air velocity, 590 or 870 ft. per minute. *Servel* compressor.

Vornado, Model 75WAC-1G (O. A. Sutton Corp., Wichita 1, Kans.) $400. A ¾-hp. unit rated at 8800 Btu per hour. 35 in. long x 25 in. wide x 14 in. deep. Air filter could be easily removed and cleaned, an advantage in respect to cost if it is properly reconditioned after cleaning to restore its filtering ability. Starting amperes, 40 (high); running amperes, 12. Room air circulation, 215 cu. ft. per minute; air velocity, 1100 ft. per minute, high (relatively less desirable than lower air speeds in other units tested). *Tecumseh* compressor.

Manufacturers' Specifications on Window Air Conditioners, 1954 Models*

Manufacturer and Model No.	Rated hp.[1]	Price[2] $	Weight, lb.	Width, in.[3]	Projection into Room, in.	Fan Motor, hp.[4] Evaporator	Fan Motor, hp.[4] Evap.-Cond.	Fan Motor, hp.[4] Condenser	Evap. Pan[5]	Ventilating Air, Max., cu. ft./min.	Room Air Circulated, cu. ft./min	Exhaust Air, Max.,[6] cu. ft./min.	Filter[7] Type	Filter[7] Size, sq. in.	Heating[8] Resistance	Heating[8] Heat Pump	UL Listed
Amana 50A	½	320	170	25	6.3		1/15		B	100	240	50	D	170	1250	—	Yes
75A	¾	390	180	25	6.3		1/15		B	100	290	70	D	170	1250	—	Yes
100A	1	440	195	25	6.3		1/8		B	150	350	90	D	170	1250	—	Yes
Bryant 50-554	½	325	215	26.3	10.5		1/12		B	65	250	65	D	220	—	—	Yes
75-554	¾	370	225	26.3	10.5		1/12		B	75	300	75	D	220	—	—	Yes
100-554	1	450	235	26.3	10.5		1/12		B	90	375	90	D	220	—	—	Yes
Carrier 51Q1	⅓	240	180	24.3	4		1/40		P	—	115	—	D	220	—	—	Yes
51Q2	½	320	190	24.3	4		1/30		P	—	170	—	D	220	—	—	Yes
51Q3	¾	400	240	26.6	4	1/50		1/30	P	—	295	—	D	290	—	—	—
51Q4	1	460	245	26.6	4	1/30		1/30	P	—	310	—	D	290	—	—	—
Crosley ACF-33-91	⅓	230	140	22.4	10.4		1/40		B	35	135	70	D	105	—	—	—
ACF-50-S-91	½	280	150	22.4	10.4		1/20		B	35	190	95	D	105	—	—	—
ACF-75-S-91	¾	350	195	26.3	14.3		1/12		B	50	300	150	D	160	—	Yes	—
ACF-100-33	1	450	220	26.3	14.3		1/12		B	55	340	165	D	160	—	Yes	—
Emerson E3B1	⅓	210	125	24	12.1		1/20		B	—	140	50	C	160	—	—	—
E4B1	½	250	130	24	12.1		1/20		B	—	185	50	C	160	—	—	—
E7B1	¾	370	190	26.6	12.4		1/12		B	80	275	100	C	180	1370	—	—
E10B2	1	440	220	26.6	12.4		1/10		B	100	320	120	C	180	1400	—	—
Fedders 44	⅓	230	140	23.4	11		1/40		B	—	135	—	D	105	—	—	Yes
46	½	320	150	23.4	11		1/20		B	—	190	—	D	105	—	—	Yes
48	¾	350	200	27.3	13.3	1/100		1/30	P	—	300	—	D	290	—	Yes	Yes
411	1	450	220	27.3	13.6		1/12		B	—	340	—	D	160	—	Yes	Yes
Fresh'nd-aire A412	½	330	185	25	3		1/15		B	—	260	—	C	—	1320	—	Yes
A434	¾	400	195	25	3		1/15		B	—	330	—	C	—	1320	—	Yes
A410	1	460	215	25	3		1/12		B	—	400	—	C	—	1650	—	—
Frigidaire ART33	⅓	230	140	22.5	13		1/30		B	40	200	40	D	155	—	—	Yes
ART50	½	300	165	22.5	13		1/15		B	40	200	40	D	155	—	—	Yes
ART75	¾	360	230	28.5	13		1/15		B	50	255	50	D	250	1200	—	Yes
ART100	1	420	260	28.5	13		1/12		B	50	320	50	D	250	1200	—	Yes
General Electric R-20	⅓	230	170	25.7	13.8		1/30		B	50	130	—	D	195	—	—	—
R-32	½	320	180	25.7	13.8		1/15		B	60	210	150	D	195	—	—	—
R-52	¾	380	195	25.7	13.8		1/12		B	95	250	175	D	195	—	Yes	—
R-72	1	450	205	25.7	13.8		1/10		B	110	320	210	D	195	—	—	—
Gibson GBC-3311	⅓	230	135	26.5	13.5		1/35		B	—	135	—	D	200	—	—	—
GAC-5011	½	320	165	26.5	13.5		1/25		B	10	200	10	D	200	—	—	—
GAC-7711	¾	290	175	26.5	13.5		1/15		B	15	265	15	D	200	1500	—	—
GAH-1021	1	450	240	26.5	13.5		1/12		B	20	310	20	D	290	1750	—	—
Hotpoint 104EY50	½	320	135	23.5	9.5		1/12		B	80	200	90	C	130	—	—	—
104EY75	¾	370	190	27.3	10.5		1/10		B	100	300	150	D	175	—	—	—
124EZ100	1	450	195	27.3	10.5		1/9		B	150	375	175	D	175	2000	—	—
International Harvester M350-S	⅓	240	115	22.4	12.3		1/40		P	35	140	30	D	145	—	—	Yes
M500-D	½	320	165	26.3	14.9		1/15		B	110	240	125	D	240	—	—	Yes
M750-D	¾	390	185	26.3	14.9		1/15		B	110	270	130	D	240	—	—	Yes
M1000-D	1	450	200	26.3	14.9		1/9		B	130	300	140	D	240	—	—	Yes
Kauffman Y	½	329	190	28	13		1/9		B	—	220	40	D	130	1300	Yes	—
X	¾	390	240	28	13		1/9		B	—	275	55	D	175	1300	Yes	—
J	1	459	270	28	13		1/9		B	—	325	60	D	175	1600	Yes	—

Manufacturers' Specifications on Window Air Conditioners, 1954 Models*

Manufacturer and Model No.	Rated hp.[1]	Price[2] $	Weight, lb.	Width, in.[3]	Protection into Room, in.	Fan Motor, hp.[4] Evap.	Evap.-Cond.	Condenser	Evap. Fan[5]	Ventilating Air, Max.,* cu. ft./min.	Room Air Circulated, cu. ft./min.	Exhaust Air, Max.,* cu. ft./min.	Filter[7] Type	Filter[7] Size, sq. in.	Heating[8] Resistance	Heating[8] Heat-Pump	UL Listed
Mitchell M-134	1/3	230	165	25.4	4.3		1/15		B	85	210	150	D	240	1300	—	Yes
M-124	1/2	280	170	25.4	4.3		1/15		B	85	210	150	D	240	1300	—	Yes
M-344	3/4	380	175	25.4	4.3		1/15		B	85	250	150	D	240	1300	—	Yes
M-1004	1	450	190	26.5	12.8	10w		1/40	P	65	290	150	D	265	1600	—	Yes
Philco 40K	1/3	200	115	26.1	12.3		1/30		B	40	130	—	D	90	—	—	—
62K	1/2	300	135	26.3	5.8		1/15		B	70	220	20	D	120	—	—	—
84K	3/4	400	165	26.3	6.1		1/12		B	100	310	25	D	165	—	Yes	—
104K	1	450	210	27.4	18	1/30		1/20	P	250	320	250	D	250	—	Yes	—
RCA AC-433-D21	1/3	230	140	22.4	10.4		1/40		B	35	140	70	C	110	—	—	—
AC-450-S-D21	1/2	280	150	22.4	10.4		1/20		B	35	190	95	C	110	—	—	—
AC-475-S-D21	3/4	350	195	26.3	14.2		1/12		B	50	300	150	C	160	—	Yes	—
AC-4100-S-D33	1	420	190	26.3	14.2		1/12		B	55	340	165	C	160	—	Yes	—
Remington 4	1/3	230	150	23.1	8.5		1/30		P	40	150	—	D	170	—	—	—
6	1/2	300	155	23.1	8.5		1/30		P	50	220	—	D	170	1200	—	—
8	3/4	360	195	27.1	15.3		1/12		B	60	275	120	D	150	1200	—	—
11	1	420	205	27.1	15.3		1/12		B	60	285	120	D	150	1200	—	—
Sears 46113	1/3	195	120	22.3	12.8		1/20		B	50	200	150	D	180	1000	—	Yes
46112	1/2	245	130	22.3	12.8		1/20		B	50	200	150	D	180	1000	—	Yes
46134	3/4	295	180	28	12.8	10w		1/40	P	65	300	150	D	260	1380	—	Yes
46210	1	355	190	28	12.8	10w		1/40	P	65	300	150	D	260	1600	—	Yes
Servel RAC-44-1	1/3	250	110	14.9	9.1	9w		16w	P	20	150	—	C	110	—	—	—
DW-64	1/2	300	120	14.9	9.1	16w		16w	P	—	160	—	C	105	—	—	—
DW-94	3/4	350	200	27	15.5		1/12		B	—	275	—	D	150	—	—	Yes
DW-124	1	400	205	27.4	15.5		1/12		B	—	285	—	D	165	—	—	—
Sutton 50WAC2	1/2	320	135	22.8	9.5		1/12		B	90	200	125	D	130	—	—	—
75WAC3	3/4	370	190	26.3	10.5		1/10		B	100	300	150	D	180	1300	—	—
100WAC2	1	450	195	26.3	10.5		1/9		B	150	375	175	D	180	2000	—	—
usAIRco 7950E	1/2	330	165	27	6.5		1/15		B	40	220	100	D	195	1250	Yes	—
7975E	3/4	395	180	27	6.5		1/15		B	60	310	150	D	195	1250	Yes	—
7910E	1	440	200	27	6.5		1/12		B	80	350	175	D	215	1250	Yes	—
Welbilt 450	1/2	300	140	22.5	13.5	9w		1/30	P	100	220	150	D	230	1350	—	—
475	3/4	340	155	22.5	13.5	12w		1/30	P	100	300	150	D	230	1350	—	—
4100	1	390	185	26.5	13.5	12w		1/30	P	125	350	175	D	280	1350	—	—
York B30	1/3	200	110	26	11.5		1/30		B	40	130	—	D	90	—	—	—
B50	1/2	300	140	26.3	6.2		1/15		B	200	240	50	D	120	—	—	—
A75	3/4	325	195	26.3	19.3		1/9		B	200	300	50	D	145	—	Yes	—
B100M	1	450	210	27.5	18.8	1/35		1/15	P	150	325	215	D	255	—	Yes	—

*The figures given are based on manufacturers' specifications for 1954 models and do not represent results of CR's tests. Data on Btu cooling capacity, room size, and moisture removal have been purposely omitted since it is felt that they do not provide a dependable basis for the choice of a unit. A blank (—) indicates that information was not available; in the two columns under heating, a blank indicates resistance or heat-pump is not offered in the unit.

[1]All units listed were equipped with *Tecumseh* compressors except as follows: *Carrier*, which uses *Copeland* compressor; *Frigidaire, Frigidaire*; *Philco York, Remington 8* and *11, Servel, Servel, Servel*; *York, York*.

[2]The price given includes provision for use as a heater in cool weather where available, unless otherwise noted. See footnote 8.

[3]The width dimension determines the smallest window width in which the conditioner can be installed. The *Servel DW-64* is especially designed for use in casement windows.

[4]Some units use separate motors for evaporator and condenser; on others a single motor with extended shaft drives the two fans. w—watts.

[5]Blower-type fan (B) should be more quiet running than propeller type (P).

[6]Figures represent rated maximum flow with vents open.

[7]Disposable (D) are discarded when dirty; permanent (C) may be cleaned and re-oiled at home and reused.

[8]Provision for heat-pump, where available, costs an additional amount. Resistance heating on the *Fresh'nd-aire, Frigidaire, Kauffman, Remington* and *Sutton 75WAC3* units costs extra also.

Four Popular Synthetic Detergents

THE phenomenal sales of synthetic detergents continued to rise during 1953 and, according to a trade association's survey, "syndets," as chemists call them for short, now account for over 53 percent of the total detergent sales. While the combined sales of soap and syndets climbed more than 3 percent for the period, soap sales dipped about 12 percent. Though there is no doubt that the trend is toward the use of the synthetic washing compounds, it seems likely that some of this increase in sales may be due to the consumer's tendency to use soapless detergents wastefully.

In a recent report of an investigation carried out by the London County Council in England, on the use of synthetic detergents, it was pointed out that there is no direct relation between the efficiency of a synthetic detergent and its ability to produce foam or suds; yet when persons were forced to use a compound with little or no suds, the users considered the product unsatisfactory even though it was as effective in cleansing as other products that had good sudsing properties. The report also expressed the view that skin troubles attributed to the syndets were due in large part to the extravagant use of the detergent, for when the materials were added to water in the correct amounts, there were no complaints of dermatitis of the hands. There is no doubt that syndets are used extravagantly, largely because their use is by guess rather than by measure, and because the consumer is likely to use more than she would if the product had the good foaming properties that she became accustomed to in long years of washing with soap. (The suds in itself has no cleansing value.) One writer said, "Perhaps it is that some of the newer products pour more easily. . .and many people consequently overpour."

The right method for the homemaker to determine the proper amount of a detergent to use for her washer, dishpan, etc., is to use a measuring cup and not just pour a guessed-at amount from the box. The quantity of detergent to use for a given job will depend on the amount of soil in the clothes, the volume of water, and the hardness of the water. Once the homemaker has used a range of measured amounts of a given detergent a few times, she should be able to judge fairly closely how much to use later, from the way the different quantities she has tried worked in her wash, or in the dishpan.

Among the heavy-duty or all-purpose cleansers known as *low-sudsing* synthetic detergents are *All* and *Spin*, which, while developed for the tumbler-type automatic washer, can be used in all types of washing machines. The *high-sudsing* syndets most widely known are (in alphabetical order): *Breeze*, *Cheer*, *Fab*, *Felso*, *Kirkman Detergent*, *Oxydol Detergent*, *Rinso Sunlight Detergent*, *Super Suds Detergent*, *Surf*, and *Tide*.

One outstanding feature of syndets, over soap, is their ability to function in cool water and in hard water. There is, however, a marked dif-

ference in performance between brands in some cases. Consumers' Research has reported on a number of different washing products in the past year or so and will continue to do so from time to time as new data become available.

In the tests, effectiveness in soil removal and tendency toward minimum soil deposition were evaluated, as in the past, by washing standard soiled cotton cloths in both hard and soft water, using the detergents in different concentrations. In addition, foaming capacity and stability of the foam were measured. The products *Sail*, *Surf*, and *Tide* are designed primarily for the general family wash; *All* is a low-sudsing detergent recommended primarily for automatic washers. All of the manufacturers of the syndets listed recommend their products for such tasks as home laundering, washing dishes and woodwork.

Summary

Performance studies indicated that *Tide* and *Surf* are comparable in soil removal and soil redeposition. *Sail* was slightly less effective in removing soil and had relatively poor anti-graying action as was indicated by relatively high degree of redeposition of soil on the washed fabric. *All* showed very good anti-graying action, but soil removal was only fair.

Sail, *Surf*, and *Tide* gave comparable suds in soft and hard water at the concentration that would normally be used for laundering; at low concentration, in hard water, *Tide* showed very low foam. Of the four detergents tested, the foam of *Tide* showed the least tendency to be dissipated by the presence of soil.

Each of the four products contained the chemical sodium carboxymethylcellulose (sodium-CMC), added to help prevent the redeposition of soil from the wash water; each contained a fluorescent dye, of the kind which makes clothes look whiter by counteracting the yellow tint that often develops in a fabric with repeated use and laundering.

A. Recommended

Surf (Lever Bros. Co., New York City) 29c for 1-lb. 3-oz. box. **Soil removal** good at low and moderate concentrations. **Anti-graying action** good in both soft and hard water.

Tide (Procter & Gamble, Cincinnati) 29c for 1-lb. 3-oz. box. **Soil removal** good at low and moderate concentrations. **Anti-graying action** good in soft and hard water.

B. Intermediate

All (Detergents Inc., Columbus, Ohio) 39c for 1-lb. 8-oz. box. **Soil removal** fair. **Anti-graying action** very good.

Sail (The Great Atlantic & Pacific Tea Co., N.Y.C.) 23c for 1-lb. 3-oz. box. **Soil removal** good. **Anti-graying action** poor.

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For the benefit of subscribers, ratings on previously reported synthetic detergents are included here. Details of performance were given in previous issues of CONSUMERS' RESEARCH BULLETIN, as noted opposite the several brand names.

A. Recommended

Kirkman All-Purpose Detergent. (August 1953)
Oxydol Detergent. (August 1953)
Rinso Sunlight Detergent. (August 1953)
Super Suds Detergent. (August 1953)
Tide. (March and August 1953)

B. Intermediate

Breeze. (March 1953)
Cheer. (March 1953)
Fab. (March 1953)

Fire Extinguishers—Vaporizing-Liquid Types a Hazard

IF vaporizing liquids of the toxicity level of carbon tetrachloride, chloroform, chlorobromethane, and methyl bromide are to be sold over the counter in extinguishers ranging from beer cans and glass and metal ceiling-type bombs to extinguishers of the pump or pressurized type, a stronger warning should be issued, cautioning against use in confined spaces except when adequate and approved respiratory protection is worn. . . .A self-contained [not an ordinary canister-type or "smoke" type] mask would have been essential for safety. . . .

From an article entitled Carbon Tetrachloride Mixtures in Fire Fighting, by H. H. Fawcett, in the November 1952 Archives of Industrial Hygiene, a publication of the American Medical Association. This article reported on a number of deaths and near fatalities of persons using in confined spaces "vaporizing liquid" fire extinguishers containing carbon tetrachloride.

Which counter top is right for your kitchen?

No material—including plastics—is ideal for counter use

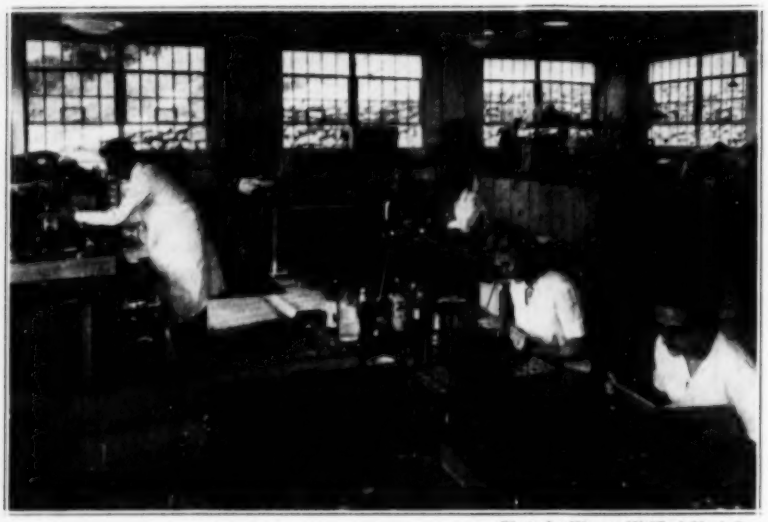
MANY valuable hints on "planning the kitchen" can be picked up from such books as The Kitchen Book of Planning and Remodeling, by R. R. Hawkins (published by the D. Van Nostrand Co.), and from articles in magazines and newspapers. On the other hand, specific, critical information on the relative merits of counter top materials is not available. Numerous counter top materials are marketed—stainless steel, Monel metal, porcelain-enameled steel, linoleum, compressed wood fiber, marble, treated or plain hardwood, ceramic tile, and the plastics. Some that are low in first cost will have a much shorter life than higher-priced materials; they may thus cost more in the long run.

The most important properties of many available counter top materials are given in the table of Advantages and Disadvantages, which is based largely on information given in House and Garden Bulletin No. 12, Your Farmhouse. . . Planning the Kitchen and Workroom, of the Bureau of Human Nutrition and Home Economics, U.S.D.A. (25 cents, from Superintendent of Documents, Washington 25, D.C.). The properties of plastic counter top materials, which CR tested, are discussed in detail in the listings.

	ADVANTAGES	DISADVANTAGES
Stainless Steel	1. no maintenance problems 2. very durable 3. not absorbent 4. resistant to heat 5. not likely to show bad stains or corrosion	1. expensive 2. likely to show scratches 3. hard, and noisy 4. shows watermarks
Monel Metal	1. no maintenance problems 2. durable 3. not absorbent 4. resistant to heat 5. not likely to show bad stains or corrosion	1. expensive 2. likely to show scratches 3. hard and noisy 4. shows watermarks
Linoleum	1. inexpensive 2. durable if edges and joinings (at corners) are watertight 3. not likely to chip or crack except when "dried out" 4. if regularly waxed, is stain resistant to most substances 5. relatively resilient and quiet 6. available in variety of colors	1. relatively expensive to maintain (frequent waxing needed) 2. shows burns and heat rings 3. rots if water gets underneath 4. badly affected by alkalies

	ADVANTAGES	DISADVANTAGES
Compressed Wood Fiber	1. inexpensive 2. non-glare surface 3. not likely to chip, crack, craze, or dent 4. resistant to warping 5. resistant to moisture 6. easy to install or replace	1. relatively expensive to maintain (seal or varnish needed which will need to be renewed periodically to correct staining) 2. subject to scratches 3. relatively hard and noisy 4. shows heat rings 5. becomes discolored with use 6. color range limited 7. shows stains
Marble	1. no maintenance problems 2. durable, but affected by acids 3. resistant to burns 4. waterproof 5. easy to clean 6. attractive	1. expensive 2. attacked by acids 3. hard and noisy 4. excessive heat (e.g., hot electric iron) may cause cracking
Hardwood	1. comparatively inexpensive unless made in strips (see text) 2. non-glare surface 3. excellent cutting surface 4. resistant to heat 5. surface can be refinished when worn	1. relatively expensive to maintain (seal or varnish and waxing needed) 2. solid wood may warp 3. may crack, whether solid or made of strips on edge, cemented 4. improperly fitted strips hard to keep clean 5. not burnproof
Ceramic Tile	1. no maintenance cost with proper care 2. durable 3. easy to clean 4. resistant to heat 5. resistant to mild acids, stains, and scratches 6. variety of colors	1. expensive 2. water may loosen cement 3. hard and noisy 4. not easy to install 5. light-colored glazed tiles cause glare 6. glaze may be destroyed by harsh abrasives (scouring powder) or strong acids
Porcelain Enameled Iron or Steel	1. relatively inexpensive 2. gives long service with proper care 3. easy to clean 4. resistant to heat, but enamel may chip or craze from extreme heat 5. resistant to grease and food stains if finish is not damaged 6. may be resistant to acids, alkalies, alcohol, and mild scratching	1. hard and noisy 2. subject to rust stains from water 3. with chipped or damaged enamel, rusting and splintering of the glassy enamel coating may occur 4. finish may be dulled or destroyed by harsh abrasives or acids 5. enamel is subject to permanent stains if glassy finish is damaged 6. May be permanently damaged by a strong blow or by dropping of a heavy utensil

Hard-surfaced materials, such as stainless steel, Monel metal, marble, ceramic tile, or porcelain-enameled iron or steel, are more sanitary than the other materials mentioned in the table, in the sense that foods and other agents are not absorbed and can be wiped off easily. The other, more absorbent working surfaces should be pretreated as indicated in the table



The counter tops were tested by CR for stain resistance by subjecting them to 35 different materials that might be found in the home kitchen. These included soaps and detergents, abrasive and alkaline cleaners, an insecticide, a bleach (sodium hypochlorite), ammonia, hot cooking fats and oils, beverages and foods that are acid or that have a tendency to stain, alcohol, shoe polish, Merthiolate (a well-known antiseptic solution for external use), crayon, pencil, and ink.

Photo by Werner Wolff of Black Star

to make them more stain- or heat-resistant.

The best cutting surfaces are made of narrow strips of hardwood, set on edge and cemented together. Most other counter coverings are subject to loss of good appearance from cuts or scratches from knives or other sharp edges.

Marble will be marked by acids and by contact with acid foods and their juices. It is wise to avoid contact of acid foods with stainless steel, Monel metal (a nickel-copper alloy), and porcelain enamel because they also may become marked.

Working surfaces should be cleaned by wiping with a damp cloth or washing (no oftener than absolutely necessary, if it is linoleum, compressed wood fiber, wood, or some plastics) with a mild, neutral soap and then rinsed and dried. Stubborn surface stains can be removed from hard-surfaced materials with a little whiting. Steel wool and harsh abrasives should not be used. Rust stains can be removed from porcelain enamel with a dilute oxalic acid solution (very poisonous and should be labeled as such; handle and store with extreme care, away from any possible access by children).

Most plastics are available in different patterns and colors. Some of them might present a problem of glare because of their glossiness. Some, like *Ward's vinyl* (which was to all extents as dull as linoleum), *Satusply*, and *Sandran*, did not have a high gloss. In choosing a color, bear in mind that a large expanse of dark counter top material may tend to darken a kitchen if it is not well lighted or if the window glass area is small. The average thicknesses of the materials ranged from 3/64 inch (*Satusply*) to 10/64 inch (*Formica* mounted on "solid core backing"); *Sandran* was the only one uneven to the touch.

Ten different smooth-surfaced counter top materials were tested by Consumers' Research. The plastics, which are often lumped together in one group in discussions of counter top materials, did not have the same properties and reacted differently to heat and staining, for instance.

The differences became clear when the materials were installed. The linoleum was relatively easy to install, and the *Ward's vinyl* and *Sandran* plastics could be cut easily with a linoleum knife or tin snips. *Satusply* could be cut easily with tin snips. The more rigid plastics, *Micarta*, *Homart*, *Formica*, and *Panelyte* had to be sawed, for example, with a saw of the type shown on page 18. *Versibond* could be broken after it had been deeply scribed along a straightedge.

All the counter tops could be laid with some kind of cement or adhesive; the manufacturers of several brands recommended that a particular cement be used for their material. All the plastic and linoleum counter top coverings were found to adhere satisfactorily to clean plywood.

In its tests, CR subjected the several counter top materials to the same kind of use as would occur in a home kitchen. In addition, accelerated laboratory tests were made to determine the resistance of the materials to stains, mildew, light, impact, indentation, heat, and washing agents such as soap and water. The laboratory test for resistance to stains is shown in the illustration.

All of the counter top coverings were marked (dulled and scratched) by abrasive cleaners, and it was clear that scouring powder should not be used on any counter top. All of the counter top materials were waterproof except *Sandran* which allowed enough water to seep through it in 6½ hours to wet the backing underneath. This alone would make it unsatisfactory for use any place where water was likely to stand since the moisture could cause loosening of the bond and rotting of the wooden counter top beneath.

The counter top covering which was most satisfactory in the greatest number of tests was *Formica*. This hard plastic showed very good resistance to impact, light, and heat. *Panelyte*, another smooth, hard-surfaced material, was next best but was slightly inferior to *Formica* in resistance to heat and impact, and in colorfastness to light. Both of these materials, however, were relatively noisy. If a quiet surface is desired, linoleum, although less desirable in other respects, would be the most quiet.

A detailed outline of the findings in CR's tests shows quite clearly that there is no fully satisfactory counter top covering just as there is no fully satisfactory flooring material, for example. The best a consumer can do is to decide what properties are most important to him and make his selection keeping those in mind. CR's ratings take into consideration the results from all the tests named, and those materials which performed satisfactorily in the greatest number of tests (with emphasis given to impact resistance, colorfastness to light, staining, washability, and resistance to burns) received the higher ratings.

Prices are reported per square foot for the counter top materials. The full price of the *Penron* table is reported.

A. Recommended

Formica, red, linen weave (Formica Co., 4615 Spring Grove Ave., Cincinnati) 90c to 95c per sq. ft.

The best material, probably, when all factors are considered.

Thickness, 4/64 in. *Showed very good resistance to impact, light, and heat,* compared with the other counter top materials tested. Was marked only by full strength *Clorox* (5.25% sodium hypochlorite bleach) out of 35 staining agents used, and that mark was superficial. One sample tested, 10/64 in. thick with "solid core backing," was bought from Montgomery Ward & Co. (Cat. No. 74—8823R at about 80c per sq. ft., plus shipping charges). **3**

* * *

Panelyte M-65, red alpine (Panelyte Div., St. Regis Paper Co., 230 Park Ave., New York 17) 75c.

As good as Formica in most respects.

Thickness, 4/64 in. *Showed relatively good resistance to impact and light.* One section bulged where a hot pan was set on it; *Clorox* and ink caused marking of the surface. **3**

B. Intermediate

Armstrong's Marbelle linoleum (Armstrong Cork Co.; Montgomery Ward's Cat. No. 72—3403M) 23c, plus shipping.

Would give satisfactory service if care were taken to avoid contact with sharp-edged tools, with heat, staining agents mentioned, and abrasive cleaners.

Thickness, 6/64 in. *Relatively good resistance to impact and to light.* Waxed linoleum was marked by *Ivory Flakes, Glim, Chat,* and *Clorox;* unwaxed, by these four and *Calgonite.* This, like other linoleums, had *poor resistance to heat;* its surface showed a burn and was roughened by a burning cigarette, and discolored by hot pans. **1**

Homart plastic (Sears-Roebuck's Cat. No. 64—9209F) 70.5c, plus shipping.

As good as the A-Recommended counter top materials in most respects but shouldn't be used where discoloration by light is a problem.

Thickness, 4/64 in. *Relatively good resistance to impact and, unlike linoleum, showed very good resistance to heat and staining.* (Marked by *Clorox* only.) Surface was crazed by a burning cigarette, but not burned. This plastic had *relatively poor resistance to discoloration by light.* **3**

Micarta (Micarta Div., Westinghouse Electric Corp., Trafford, Pa.; distributed by U. S. Plywood Corp., Weldwood Bldg., 55 W. 44 St., New York 36, and U. S Mengel Plywoods, Inc., Louisville 1, Ky.) 81c.

Micarta would give satisfactory service if it were not subjected to rough treatment or if colorfastness to light were not important.

Thickness, 4/64 in. *Very good resistance to heat and staining* (marked by *Clorox* only) but *only fair resistance to impact.* This plastic had *relatively poor resistance to discoloration by light.* **3**

C. Not Recommended

Sandran, No. 99 (Montgomery Ward's Cat. No. 72—4427M) 16.5c, plus shipping. Thickness, 4/64 in. *Very good resistance to light and staining* and *fair to poor resistance to impact. Sandran was not waterproof,* and backing showed heavy covering of mildew in humid air. It was burnt and blistered by a burning cigarette, and was the worst of the materials tested in respect to retaining indentation caused by a concentrated pressure. **1**

Ward's vinyl (Montgomery Ward's Cat. No. 72—4436M) 41c, plus shipping. Thickness, 5/64 in. *Relatively good resistance to light.* The vinyl was marked by *Ivory Flakes, Chat, Calgonite,* hot water, *Clorox,* ammonia, vinegar, red beet juice, coffee, tea, milk, tomato juice, lemon juice, shoe polish, ink, crayon, and pencil. It was blistered and showed a

burn mark from a burning cigarette, bulged where hot pans were set on it, and there was a very slight trace of mildew on working surface in humid air. **2**

Satusply, "red frost" (Laminated Products Dept., U.S. Rubber Co., Mishawaka, Ind.) 63c. Thickness, 3/64 in. (thinnest of all materials tested). *Satusize*, special bonding agent needed to install *Satusply*, 49c a pt. *Relatively poor resistance to impact, light, and heat.* Surface was stained yellow by a burning cigarette and bulged where hot pans were set on it, but was not marked by any of the staining agents. **3**

Versibond, No. 107, "red pearl" (The Ohio Rubber Co., Willoughby, Ohio) 65c. Thickness, 4/64 in. *Showed the poorest resistance to impact* of the counter tops tested, and had *relatively poor resistance to discoloration by light.* The surface was marked very slightly by 4 agents, *Chat*, *Flit*, *Clorox*, and hot *Mazola* oil (but these spots were not very noticeable). **3**

Plastic-Top Table

B. Intermediate

Penron table (Penron Inc., 415 Lexington Ave., New York 17; sold by Goldsmith Bros., 77 Nassau St., New York 8) $16.95 (full price of folding table with leg, to be attached to a wall, with laminated plastic top 20 x 30 in.).

Corner work of steel trim was not well made. Counter top of unit had good properties.

Because of its nature, the *Penron* table was not subjected to all the tests. It had *very good resistance to heat and staining* (marked by *Clorox* only) and *good resistance to impact.* The table top showed no signs of discoloring in over a year. **3**

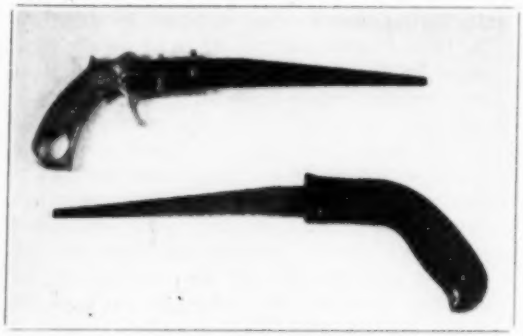
Cutting and Shaping of Counter Top Materials

SEVERAL different methods of cutting the counter top materials listed in the preceding article were tried. An attempt was made to cut each material with a linoleum knife, tin snips, and with a small hand saw (compass saw). Each counter top material was also scribed with a deep scratch using a sharp tool such as an awl along a straight edge and then bent to see if a clean break would occur or if there would be any damage to the surface of the material near the scratch.

Sandran, *Armstrong's linoleum*, and *Ward's vinyl* were cut most satisfactorily with a linoleum knife or tin snips. *Satusply* could be cut easily with tin snips. *Formica* was too thick to cut with snips, and the other four showed many fine cracks along the right-hand edge of the cut which were produced by the bending of the material by the upper blade of the snips as these stiff, hard materials were cut. This calls for counterclockwise trimming, which would be normal for a right-handed person, so that the cracked parts would be in the pieces to be discarded. Scribing and breaking proved to be a satisfactory method with only three of the materials, namely *Sandran*, *Satusply*, and *Ward's vinyl*.

Formica, *Panelyte*, and the *Homart plastic* because of their thickness or hardness (both, in the case of *Formica*) should be sawed to shape. *Formica* was too thick to scribe and break, and the method did not work well with the other three. CR found *Versibond* and *Micarta* the most difficult to cut. *Micarta* could be cut with tin snips or sawed, but when a saw was used, it stuck or bound on the return stroke. Fair results were obtained on *Versibond* by scribing and breaking; other methods were not satisfactory on *Versibond* and *Micarta*.

Of the four small saws of similar type used to cut the *Formica* and *Panelyte* (one *Allway*, one *Dunlap*, and two with no brand names) the *Allway* cut the two materials in the shortest time (it cut a given distance in half the time it took with the *Dunlap*).



The upper saw, Allway, has a handle which would be comfortable only for persons with small hands. The saw below (no brand name) has a handle that fits the hand comfortably. The manufacturer of this saw should have shown his name and address, so that the consumer who liked it or his friend or neighbor needing a similar tool would know how to ask for another.

Combination Storm Sash and Screens

COMBINATION storm sash and screens are highly desirable adjuncts to modern comfort living. Unfortunately, however, the industry has become so highly competitive that many firms are using high-pressure selling tactics. Construction features designed solely to facilitate the work of the manufacturer or installer are frequently exploited as advantages to the consumer; the importance of minor points of design is often exaggerated; disadvantages are actually presented as selling points; and "bait" advertising is widespread. As listed by the National Established Roofing, Siding, and Insulating Contractors' Association, "bait" advertising includes: (1) offering such premiums as "free" or reduced price storm doors while padding the regular price of the other items, (2) citing a lower price in the advertisement than would apply to a window of average size, (3) accepting a deposit and then attempting to sell a better grade through "confidential" advice that the cheap window really would not do justice to the "lovely" home, and (4) failure to include installation in the published price. The natural result is confusion in the minds of prospective customers of the storm-sash industry.

Under normal conditions of wind and exposure, 30 to 40 percent of the heat in a home is lost through and around windows. The glass itself conducts much heat from the room to the outside air, and the inside surface of the glass becomes very cold. This results in: (1) excessive fuel consumption, (2) creation of cold panels to which near-by occupants radiate heat, producing discomfort, (3) excessive drafts, and (4) excessive condensation of moisture on the cold glass. These conditions can be remedied to some extent by double-glazed windows, or by storm sash, and conditions (1) and (3) to some extent by weatherstripping.

Double Glazing

Double glazing cuts the heat loss of window glass approximately in half through the creation of an inert air space which provides an insulating barrier between the two panes. Such windows are expensive; other disadvantages are that they require special window sash, and are available only in full-window sizes (one pane inside and one outside, instead of two or more smaller panes on each surface). Double-glazed windows are sold under the names *Thermopane* (Libby, Owens, Ford Co., Nicholas Bldg., Toledo 3, Ohio) and *Twindow* (Pittsburgh Plate Glass Co., 420 Ft. Duquesne Blvd., Pittsburgh 22). See CONSUMERS' RESEARCH BULLETIN, January 1949, page 21.

Storm Sash

Storm sash with weatherstripping provides a degree of insulation which gives an over-all protection approximating that of double-glazed windows.

With storm sash, as with double-glazed windows (*Thermopane* and *Twindow*), condensation on the inner surface of the inner window is greatly reduced, owing to the much higher temperature of the glass. For example, storm sash permits about 33 percent relative humidity at 70°F (indoors) without condensation, as compared with 14 percent humidity permissible with single windows without storm sash. Since the outside glass or storm glass really substitutes for the inner glass in so far as temperature is concerned, some condensation on it is to be expected. However, this will usually be small in amount because of the relatively small amount of moisture contained in the limited amount of air that leaks into the space between the two sash.

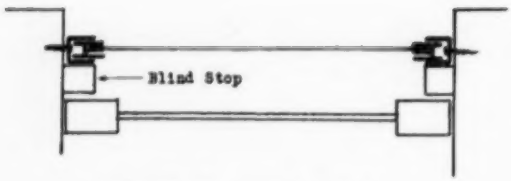
Weatherstripping

Storm sash should not be expected to take the place of weatherstripping; it is a good idea to install weatherstripping on the original windows of the house for extra protection. The Small Homes Council of the University of Illinois has shown that on a relatively poorly fitted window, storm sash used alone cut air leakage into and out of the room to half the original amount; storm sash plus weatherstripping cut air leakage to one-quarter of the amount that would exist with a window without weatherstripping or storm sash.

Fuel Saving

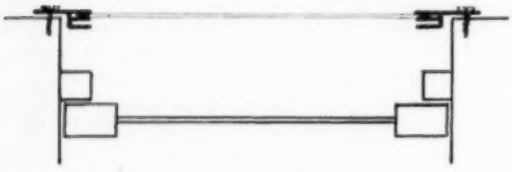
The annual fuel saving due to tight storm sash is reported by the University of Illinois to be 20 percent. In spite of claims to the contrary, frequently made by manufacturers, larger savings should not be expected, and under many conditions the savings may be expected to be smaller.

This figure of 20 percent saving can be used as a guide to the claims that storm sash will pay for themselves in a short time, which are almost



A—Floating Frame, against blind stop.

B—Flange, screwed to blind stop.



C—"Appliquéd," screwed to outside window frame.

***Figure 1**—Sectional diagrams showing the most widely used methods of construction of combination storm sash and screens.*

always exaggerated by aggressive and enthusiastic salesmen.

Wood vs. Aluminum Frames

While bronze is widely used as a storm sash construction material for industrial buildings, hotels, hospitals, and schools, it is very expensive, and wood or aluminum will be used for the vast majority of domestic installations.

Wood can sometimes be blended into the architecture and color scheme of a home to better advantage than aluminum, but its outstanding advantages are its marked economy and the fact that wooden sash can be more readily installed by the home craftsman. Offsetting disadvantages include the need for painting whenever the house is painted, plus greater weight and clumsiness. (Note that the most modern wood sash have removable half-window-sized panels, which obviate the need for removal of the full sash and hazardous work with a ladder in spring and fall.) Of the two woods most commonly offered, redwood and pine, the former is by far the more durable and resistant to rot; it is considered well worth its higher cost.

Aluminum is durable and light in weight, and does not require painting. (It can be painted to blend with the house, if desired. A zinc chromate paint should be used as a priming coat.) Disadvantages of aluminum are that the sash are usually more expensive than wood; they can, if poorly designed, detract from the general appearance of the house; they require expert installation, with service backing. Because of the strong likelihood of electrolytic deterioration of two dissimilar metals in contact, aluminum frames are usually fitted with screening made of plastic or aluminum. (See section on "Screening Materials.")

Wood sash have the advantage over aluminum of lower heat transmission (heat loss); nevertheless, aluminum is currently the more popular. The much more aggressive salesmanship and advertising of aluminum sash, plus the public's not knowing that wood sash are now available in the removable panel construction, can be considered to have played a large part in the preference for aluminum storm sash.

Types of Aluminum Storm Sash

Wide variations in both the sizes and construction of even "standard" windows has made necessary the development of several types of sash. Foremost among these, as sketched in Figure 1, are (A) a floating frame which fits against the window's blind stop and is adjusted to fit the sides of the window, (B) a flange which screws to the blind stop after having been cut to fit, in the field, and (C) an "appliquéd" installation which is screwed to the outside of the entire window. While a great deal is made of these differences in design, they were, without exception, developed to facilitate a given maker's methods and components of manufacture and installation; in general they are of no particular significance to the consumer.

The point which a consumer will have to decide is whether to buy the simple panel type at about $20 per window; a two-channel type at $25; or a three-channel style at $30.

Briefly, the types used can be described as follows:

The panel-type window, often sold as an "economy" model, consists of a fixed frame with two removable half-sash. Seasonal changes require removal of one glass panel and substitution of a half-screen, or vice versa, in the spring and fall; the unit that is not needed is then stored away. The use of this type is frequently discouraged on the ground that it is not designed for frequent opening of the window or screen—a poor argument, since many windows of a house are never opened during the winter. Even the labor of removing the unwanted unit to storage twice a year is a matter of no significance when it is

realized that the sash should be removed for cleaning at least this often; while they are out for cleaning, they might as well be placed in storage.

Two-channel windows provide for the independent raising or lowering of two units, an upper sash and a lower screen or sash. In the spring and fall, the unneeded third unit is removed to storage and replaced. With the exception of this chore, the two-channel unit is completely flexible for the duration of the season, and in the winter permits ventilation in any amount. Where the panel or two-channel types are called self-storing, this usually means either that one sash is immobile while the third is stored, or that a simple locking device is included to store the third unit in the upper half of the window area.

The three-channel window allows two glass sash and one screen to move up or down independently of each other. Highly advertised advantages are those of instantaneous change-over from storm window to screen, and of not having to remove either sash or screen at any time for storage. The screen is merely pushed to the top when not needed, where it (average wire mesh) shuts off about one-third of the light through the upper sash during the winter when maximum light from outdoors is most needed.

It is the industry's practice to sell the prospective customer on one of these three types for use on all windows, throughout the house. This is in complete disregard of the fact that needs differ at different windows. CR thus suggests the wisdom of analyzing one's needs with respect to each window and then insisting upon a planned application of two types, with resultant appreciable savings in the installation. Approximately $75 can be saved on a typical seven-room (14 windows) house if the consumer uses double-channel instead of three-channel windows; a further saving of about $50 can be made by using panel-type windows (the cheapest kind) instead of double-channel windows where it is not necessary to open and close the windows. (Most windows will not ordinarily need to be opened. In a bedroom or bathroom, it is necessary, as a rule, to open only one window.)

Important Considerations in Selecting Storm Sash

The listing and rating of storm sash are complicated by the large number of manufacturers engaged in the business; by the even larger number of fabricators, many of whom assemble windows of nationally advertised brands to widely different standards of workmanship; by the large number of models available; and by such frequent changes in design details that a description of a sash often becomes obsolete before it can be printed.

Prospective purchasers are advised to check such points as the following before contracting for, or accepting the storm sash:

1. Can a broken glass be replaced at home or in a local hardware store, or does the design require that it be sent to a manufacturer's service center?

2. Is the charge for replacing a pane of glass and for other needed repairs reasonable, or is this to be a hidden increase in cost?

Consumers' Research found that the cost of replacing a 24 x 24 inch pane of glass ranged from $3 to $10; that this operation ranged from the simple removal of two screws to rebuilding of the sash, which called for expert work.

3. Are you satisfied that you can operate the sash freely and without difficulty?

An instance was found where an entire installation had to be removed because the housewife did not have sufficient strength to raise the windows. Other sash can be complicated to the point of nuisance. If the demonstration model won't work freely for the salesman, there is little chance that it will work even moderately well in the home in practical use.

4. Is the operation of removing sash simple and forthright, or does it require complicated maneuvers?

Few household items are more hazardous potentially than large panes of glass set in relatively light aluminum frames. They must be handled carefully at all times.

5. Does wind pressure on the outside of the storm glass tend to tighten the sash at all points where it can admit air, or does it increase the crack to admit more air? Is there a chance of the sash blowing in at any position?

This is a most important check point. A 40-mile wind exerts a total pressure of 21 pounds on a 24 x 24 inch sash. A storm sash that cannot withstand such wind pressure without increased leakage is a poor design.

6. Will the outside appearance of the window be satisfactory?

7. Do all windows operate smoothly without the application of grease?

If the answer to this is anything but an unqualified "Yes," do not sign the completion slip or make final payment until the fault is corrected. Stiff motion can be a sign of forced fit, which will become worse rather than better. If there is to be lubrication at all, hard automobile

wax, such as *Simonize* wax, should be used exclusively; *Vaseline*, oils, or grease should never be used, because of their tendency to pick up all sorts of dirt and grime and thus jam the window.

8. Is the contact between the sliding sash and stationary channel designed for free movement?

Aluminum slides poorly on aluminum. Suitable guides, zinc, nylon, etc., should be built into all such points. Friction of a small pin or spring on the thin edge of a rail is far more likely to give early trouble than the rubbing of a broad surface in a wide channel.

9. Do the meeting rails (upper crosspiece of the lower sash and lower crosspiece of the upper sash) interlock or fit tightly when the storm sash is in a closed position?

10. Do the meeting rails match the height of those on your windows, and is the glass area as large as at present?

A meeting rail that is higher or lower than that of your window may give a very unsatisfactory appearance. Frames that are wider than your present frames obstruct light and are likely also to be unsightly.

11. Do the sash have sufficient friction in their channels or have pins to hold them in a partly open position? If pins are used to lock the sash in partially opened positions, are they located to suit your needs?

Stopping points can often be changed or new ones added at the time of installation.

12. If advertised as "burglar retarding," is the alleged protection real?

13. Have you reason to have confidence in the ability and integrity of the contractor?

This is the all-important question in all major domestic installations. Remember that if you need service or parts at all, you are most likely to need them several years from now, when the fly-by-night operator, or man of low business standards, will be gone, or in some other business.

Screening Materials

The following materials are most often used in screens.

Bronze screening (so-called "commercial bronze") is highly satisfactory; it is strong and the most resistant to general atmospheric corrosion. Screen wire of this alloy is not recommended for use with aluminum frames, because of the likelihood of corrosion due to electrolytic action.

Aluminum screening is commonly used in aluminum frames (avoids corrosion by electrolysis); conversely, aluminum screening should not be used with bronze frames. While generally satisfactory, aluminum is not as strong as bronze. Only "cladded" aluminum (such as *Alclad*) is now being marketed; this type is more durable than plain aluminum.

Plastic screening is improving in quality and gaining in popularity. Unlike the metals, it has a tendency to shrink to a desirable tight fit after installation. (Some may shrink *too* much, unfortunately, and pull away from the frame.) A cigarette or similar source of heat may melt a hole in a plastic screen. One outstanding disadvantage is the difficulty in determining the type or quality of the plastic in advance of use.

Galvanized screening is subject to rapid corrosion, and is thus recommended only for purely temporary use, or where first cost is the only consideration.

"Venetian blind" screening is designed to keep out direct rays of the sun when the sun is high in the sky. This screening is made of many tiny louvers set at an angle of about 15 degrees so that some early-morning and late-afternoon sun will come in directly, but the midday sun is excluded. Two of these materials tried by CR were *Ingersoll KoolShade* and *Kaiser Aluminum Shade Screening*. *KoolShade*, which cost 94 cents per square foot (in 30-inch width), is made of 17 horizontal louvers per inch, held together by vertical wires ½ inch apart, twisted around each louver. The louvers are thin bronze strips about 1/16 inch wide. *Kaiser Aluminum Shade Screening* cost 56 cents per square foot, and is made of a single thin sheet of aluminum with about 18½ louvers stamped out per inch, leaving vertical strips about 1/8 inch wide every inch. This arrangement is a little more effective than *KoolShade* in stopping the direct rays of the sun, but it interferes much more with visibility of things seen through the screen. The louver screens should be placed only on windows facing the sun, so that their darkening effect on the room is made relatively unimportant.

Aluminum Combinations

All prices are for sash having 24 x 48 inch glass area sash, with two half-storm-sash and one half-screen; prices include installation unless otherwise noted. Prices are necessarily only approximate. In a few cases where prices are not given, the manufacturer did not respond to requests for this information.

A. Recommended

Ace (Ace Industries Co., 819 Mahoning Ave., Youngstown, Ohio) Three-channel only, $28.95. Mortise-

and-tenon joints for rigidity and strength. Glass in putty, relatively easily replaced, by removal of corner taper pins. Stainless-steel spring slides, good, but require care in installation to provide correct tension and prevent binding in future. Interlocking meeting rails.

Allied (Allied Metals, Inc., 14 Hamilton St., New London, Conn.) Three-channel (*Beacon*), $30; two-channel rolled aluminum (*Berkeley*), $25; two-channel extruded aluminum (*Sentinel*), $27. Sash corners butt-joined with self-locking extruded aluminum corner keys for easy reglazing. Double-steel-spring sliding action. *Fiberglas* (glass fiber) screening cloth on all models.

Alwintite (General Bronze Corp., Stewart Ave., Garden City, N.Y.) Three-channel only, $28 to $33. 16 x 18 mesh *Alclad* screening cloth, somewhat finer than the 14 x 18 mesh usually used. Tension spring with nylon pressure-plate to facilitate sliding and prevent rattle, which is very desirable. Spline-reinforced corners and removable corner screws for replacement of glass are good. Meeting rails do not interlock (a disadvantage).

American (American Heating & Appliance Co., 277 S. 62 St., Philadelphia) Three-channel, $28. Same mechanical details as *Ace*.

Burrowes (Burrowes Corp., Portland, Maine) Three-channel extruded aluminum, $37.33; two-channel rolled aluminum, $23 to $30; two-channel, self-storage rolled or extruded aluminum, $30 to $32. This make, said to be "custom built," is built with narrower frames and wider glass areas giving neater appearance than when pre-sized units are made to fit a wide range of window sizes.

Eagle-Pitcher (Eagle-Pitcher Insulation Div. Eagle-Pitcher Sales Co., 900 American Bldg., Cincinnati) Three-channel only, $31.78. Cast meeting rail. Very desirable zinc-alloy sliding surfaces. Sash locks in variety of positions.

Homart (Sears, Roebuck & Co., Chicago) Single-channel, self-storing (de luxe), $21. Glass set in rubber in a manner that permits local replacement. Sash well conceived and constructed.

Hunter (Hunter Mfg. Co., Emily, Pa.) Two-channel, $31.95. Rolled aluminum throughout. Glass encased in *Koroseal* and held in place by removable splines for convenient local repair. Wind pressure very desirably tightens frame. Aluminum frame etched and lacquered (latter for areas near sea).

Kane (Kane Mfg. Corp., Kane, Pa.) Three-channel type. Extruded aluminum (also available in bronze or steel). Replacement of glass facilitated by use of removable spline. Full-length top-hinged screens and half-length sliding screens are available. Stainless-steel tension springs are used, which require careful installation, but are desirable.

Keystone (Keystone Alloys Co., Derry, Pa.) Three-channel, $30.80; two-channel, $28. Glass set in plastic moulding can be replaced by removing four screws. Single- or double-strength glass, depending on size. Windows slide on stainless-steel inserts, desirable. Interlocking meeting rail.

Metal-Lite. Same mechanical details as *Ace*.

Watson (Watson Mfg. Co., Jamestown, N.Y.) Two-channel rolled-aluminum type, about $23.50. "Custom made." Zinc lining for free sliding action. Glass set in rubber. Felt weatherstripping provided.

B. Intermediate

Alsco (Weatherguard Corp., 501 King St., Philadelphia) Three-channel type, $31 to $33; two-channel, $30; economy (*Guardsman*), panel type, $25. "Four-channel" is misleading; the so-called fourth channel refers only to the floating frame common to several such models. ¶Cost of factory glass replacement reported to be high; when questioned on this point, a sales representative refused to estimate the charges or to call local repair shop for its estimate. On two-channel models, the screen is designed to be left in place all winter.

Homart (Sears, Roebuck & Co., Chicago) Three-channel (*Premier*), $24.95; panel type (*Economy*), $19.95. Glass set in rubber; return to Sears' service center is recommended for replacement, hence the *B* rating. Interlocking meeting rail. Generally well designed.

Kaufmann (Kaufmann Corp., 17210 Gable, Detroit) Three-channel, $28.05; two-channel, $20.35; panel type (*Economy*), $15.75. "Venetian blind" type (see page 22) screening also available. Double-thick glass, cushion glazed, adapted to local repair. Has desirable zinc friction strips. Sash not interlocked at meeting rail.

Wood Combinations

A. Recommended

Hess (Hess Planing Mill Co., 200 N. Franklin St., Waynesboro, Pa.) Panel type. Custom-built, kiln-dried, all-heart redwood. Ventilation by tilting sash—not raising. Inserts removable from inside of building. Bronze or *Lumite* screen cloth. (*Lumite* for hot and humid areas.) Heavy 1¾-in. frames. Wood surfaces are hand-varnished before shipping.

B. Intermediate

Anderson (Anderson Corp., Bayport, Minn.) Treated pine. Full-length hanging frames with permanent aluminum screens; two removable glass panels fit into inside of frame for winter use. Screens must be left in place all year; entire frame must be removed for cleaning screens (serious disadvantage).

Homart (Sears, Roebuck & Co.) Ponderosa pine storm sash available in fixed full-length type, $4.95; inset panel type, $11.40. (Not installed.)

C. Not Recommended

Vacol (V. E. Anderson Mfg. Co., Owensboro, Ky.) Western pine. Two-channel (*Invisible*), $18, not installed. Panel type (*Kwick Change*) also available.

Hudson Hornet

Buick Special 41D

Five 1954 Automobiles

Nash Rambler Custom

Buick Special 41D

The Buick Special 41D is considered a satisfactory car in most respects for those who desire a heavier car than one of those offered by the Big Three. It would, however, be much improved if it had better riding qualities on rough roads, and a lower steering ratio.

A– (Tentative)

Buick Special 41D. $2419 delivered N.J. *Dynaflow* $192.50; heater and defroster, $82; radio, $92.50

CR'S FINDINGS ON ROAD TESTS

Acceleration times from 0 to 30 m.p.h., 6.3 sec.; from 20 to 50 m.p.h., 10.4 sec.; from 40 to 60 m.p.h., 9.9 sec.; all good and somewhat better than last year's model.

Gasoline mileage under test conditions:[1] at 30 m.p.h., 19.5 m.p.g.; at 50 m.p h., 17.2 m.p.g., about average, and slightly better than the 1953 model

Riding comfort was good on smooth roads, but on rough, uneven asphalt-macadam roads, the ride was very bouncy. This may have been due in large part to out-of-round tires and the wheel balancing that had been done on this car; the *Buick Century*, which had the same chassis and body, gave a much better ride on rough roads. It is believed that the adverse effects of out-of-round and out-of-balance tires (a common and serious problem with today's high-speed driving) will be particularly objectionable on this car with its combination of coil springs and lever action shock absorbers in the rear (continued from last year). Steering was precise, but steering response was too slow (too many turns of steering wheel). Cornering ability was good. The car body was adequate as to space except for rear headroom. Had several body rattles and some leakage of rain at the right front door and trunk.

Speedometer error: at indicated speed of 20 m.p.h., actual speed was 18.5 m.p.h.; at 35 m.p.h., 32; at 50 m.p.h., 45 (unusually large). **Odometer** was inaccurate by about 10% (100 miles would be recorded as 110 miles). This is the largest odometer error found on any car tested to date.

Equipment on car tested: *Dynaflow* drive, radio, heater, "safety group," flexible steering wheel, "M-accessory group," "custom trim," "two-tone paint," amounting in all to $508 above the $2419 base price.

[1]These are not the same figures as miles per gallon under average road conditions; however, the figure for gasoline consumption at 50 m.p.h., if multiplied by 0.8 or 0.9 will often be close to that obtained in normal driving of an automobile.

BUICK SPECIAL 41D SPECIFICATIONS

Engine

8 cylinders in "V" arrangement, valve in head
Bore, 3.625 in.; stroke, 3.2 in.
Piston displacement: 264 cu. in.
Brake horsepower (rated): 143 at 4200 rpm. (150 hp. with Dynaflow)
Taxable horsepower: 42.05
Compression ratio: 7.2 to 1 (8.1 to 1 with Dynaflow)
Cylinder head: cast iron
Automatic choke
Crankcase oil capacity: 6 qt.
Oil filter: full-flow type
Cooling system (pressure type): 16-1/2 qt. plus 1-1/2 qt. for heater (with Dynaflow, 18-1/2 qt. plus 1-1/2 qt. for heater)

Chassis, etc.

Wheelbase: 122 in.
Over-all length: 206.3 in.
Width: 76.8 in.
Height: 60.5 in.
Gear ratio: 3.9 to 1 (3.6 to 1 with Dynaflow)
Engine revolutions per mile: 2830 (2610 with Dynaflow)
Tires: 7.60 x 15 (adequate)
Brake area: 184.6 sq. in.
Brake factor:[2] 41
Frame: channel section side rails, X center cross member, box-type front cross member
Minimum road clearance: 7.7 in.
Turning diameter: 42.9 ft.
Front shoulder room: 57 in.
Rear shoulder room: 58 in.
Steering factor: 6.1 (undesirably high)

Other details

Battery: 12-volt 60-amp.-hr.
Gasoline tank: 19 gal.
Windshield wipers: vacuum type
Shipping weight: 3715 lb.
Curb weight of car tested: 4059 lb., 54% on front (average)

OBSERVATIONS AND CONCLUSIONS

The old straight-eight engine has been discontinued this year in favor of a new V-8 engine with rated horsepower of 143 at 4200 rpm. with *Syncromesh* transmission (150 hp. at 4200 rpm. with *Dynaflow*). (Last year's straight-8 engines developed 125 hp. and 130 hp., respectively, at 3800 rpm.) The *Dynaflow* models with 8.1 to 1 compression ratio require the use of premium gasoline. The new bodies with "panoramic" front windshield give good front visibility, but in CR's opinion not significantly better than that obtainable with windshields of normal curvature; vision to rear also good. While there is a rumor heard that the windshields may crack when the car is jacked up, CR jacked this car up several times without any ill-effects, and the local dealer states that he has had no cracked windshields to replace. We believe the report to be strictly in the "unverified rumor" class, to be given no weight whatever unless conclusive *proof* is furnished of actual instances of failure. The front bumper seemed to lack rigidity. *Buick's* power brakes, available at extra cost, have a valuable safety feature to provide continuation of power braking if the engine should stall. A relay switch starts an electric vacuum pump to provide braking power normally furnished by engine manifold vacuum, whenever the engine speed drops below 300 rpm. *Buick's* foot-pedal-operated parking brake is considered much better than the usual hand-operated parking brake. Instrument panel was well arranged and lighted. The heater is good, but the controls are somewhat complicated. (Heater controls can be illuminated by turning on the map light.) Fresh-air intake on cowl (very desirable). The glove compartment is small, and its door difficult to open. ¶The engine was quiet even at high speeds. *Dynaflow* transmission operated satisfactorily, but there was inadequate engine braking in "L" (Low) when descending a steep hill. To start the engine by pushing, if this becomes necessary, the selector lever must be placed in Neutral (N) and shifted to Low at a speed of around 15 m.p.h. The engine should then start when a speed of around 25 m.p.h. is reached. If transmission is inoperative, car can be towed on its rear wheels provided a "neutral locking strap" is installed.

Oldsmobile Ninety-Eight

The Oldsmobile Ninety-Eight is a well-built car of good design that should serve well for those who require exceptional performance (acceleration).

A– (Tentative)

Oldsmobile Ninety-Eight. $2884 delivered Pa. Radio, $101; heater and defroster, $80; *Hydra-Matic* transmission, $178; power brakes, $40; power steering, $135; *E-Z-Eye* tinted glass, $32.

CR'S FINDINGS ON ROAD TESTS

Acceleration times from 0 to 30 m.p.h., 4.1 sec., very good; from 20 to 50 m.p.h., 7.3 sec., very good; from 40 to 60 m.p.h., 6.7 sec., very good.

Gasoline mileage under test conditions:[1] at 30 m.p.h., 22.6 m.p.g.; at 50 m.p.h., 19 m.p.g. (15 and 10%, respectively, better miles per gallon than last year's model). Considered relatively good for such a powerful car.

Riding comfort was good at both low and moderate speeds, but some road shock was noticeable. Steering was precise, and considering that the car did not have power steering and did have oversize tires, the steering effort was only moderate. This would seem to indicate that, if good engineering design is employed and the car is properly maintained, most cars will not need power steering for driving on normal roads, unless the user is lacking in muscular strength or must avoid exertion for reasons of health.

Speedometer errors: at indicated speed of 20 m.p.h., actual speed was 19.7 m.p.h.; at 35 m.p.h., 33.9; at 50 m.p.h., 48.6; at 60 m.p.h., 58.1. **Odometer** was inaccurate by about 3% (100 miles would be recorded as 103 miles).

Equipment on car tested: Radio, heater, *Hydra-Matic*

[1]These are not the same figures as miles per gallon under average road conditions; however, the figure for gasoline consumption at 50 m.p.h., if multiplied by 0.8 or 0.9 will often be close to that obtained in normal driving of an automobile.
[2]A measure not of braking ability, but of brake life expectancy.

drive, oversize tires (8.00 x 15), *E-Z-Eye* green-tinted glass.

OBSERVATIONS AND CONCLUSIONS

This year the rated brake horsepower has been increased from 165 at 3600 rpm. to 185 at 4000 rpm.; the compression ratio from 8.1 to 1 to 8.25 to 1; and the engine displacement from 303 cu. in. to 324 cu. in. The better engine performance is particularly noticeable in the low and moderate speed ranges, where the acceleration figures were very good. The engine requires premium gasoline. The noise level of the engine and the car was very low, and there were no noticeable body rattles or creaks. The new so-called "wrap around" windshield gives good front visibility (see comment on *Buick Special*). The *Hydra-Matic* transmission operated satisfactorily, but there was some abruptness of speed change with shifting of gears. Selector lever on the steering post, but the quadrant showing the range in which the transmission is operated is incorporated in the instrument panel and is operated electrically (considered a needless and disadvantageous complication). Engine braking in "Lo" (Low) when descending a steep hill was considered satisfactory. The car could be started by pushing, if necessary, at a speed of about 22 m.p.h. The fresh-air inlet is located on top of the cowl (very desirable). The factory recommends that, should it become necessary to tow a *Hydra-Matic* equipped *Oldsmobile*, with the transmission inoperative, the propeller shaft must be removed or the vehicle towed with the rear wheels off the ground, to prevent damage to the transmission. Interior dome lights go on upon opening of any door or by a switch on the door post.

OLDSMOBILE NINETY-EIGHT SPECIFICATIONS

Engine

8 cylinders in "V" arrangement, valve-in-head
Bore, 3-7/8 in.; stroke, 3-7/16 in.
Piston displacement: 324.3 cu. in.
Brake horsepower (rated): 185 at 4000 rpm.
Taxable horsepower: 48
Compression ratio: 8.25 to 1
Cylinder head: cast iron
Automatic choke
Crankcase oil capacity: 5 qt.
Oil filter: full-flow type
Cooling system (pressure type): 21.5 qt. with heater

Chassis, etc.

Wheelbase: 126 in.
Over-all length: 214.3 in.
Width: 78.3 in.
Height: 60.5 in.
Gear ratio: 3.42 to 1 (3.23 to 1 with Hydra-Matic)
Engine revolutions per mile: 2480 (2340 with Hydra-Matic)
Tires: 7.60 x 15 (overloaded)
Brake area: 192 sq. in.
Brake factor:[2] 42
Frame: channel section side members and "X" member, 5 cross members
Minimum road clearance: 6.25 in.
Turning diameter: 43 ft.
Front shoulder room: 58.2 in.
Rear shoulder room: 56.8 in.

Other details

Battery: 12-volt 60-amp.-hr.
Gasoline tank: 20 gal.
Windshield wipers: vacuum type
Shipping weight: 3846 lb.
Curb weight of car tested: 4250 lb., 53.3% on front (less than average, desirable)

Plymouth Savoy

A very good car with no serious faults, continuing Plymouth's good, well-tried design.

The Plymouth Savoy with Hy-Drive automatic transmission was reported in CR Bulletin, February 1954. The results of tests on a similar car with a standard transmission and 4.10 to 1 rear axle ratio follow.

A– (Tentative)

Plymouth Savoy with Standard Transmission.

CR'S FINDINGS ON ROAD TESTS

Acceleration times from 20 to 50 m.p.h., 12.6 sec. (average); from 40 to 60 m.p.h., 9.9 sec. (good). These figures were a good deal better than those obtained with the *Hy-Drive*-equipped car (which gave 16.6 sec. and 15.6 sec., respectively) and comparable with other cars in the *Plymouth* price group.

Gasoline mileage under test conditions:[1] at 30 m.p.h., 22.2 m.p.g.; at 50 m.p.h., 17.2 m.p.g. Not as good as corresponding last year's *Plymouth* car with standard transmission, which gave 18.8 m.p.g. at 50 m.p.h.

OBSERVATIONS AND CONCLUSIONS

Steering effort on this car, which did not have power steering, was moderate. Brake pedal located directly below and too close to steering column, which interfered with its operation. For other comments and criticisms, see report on *Plymouth Savoy* with *Hy-Drive*, February BULLETIN, pages 10-11.

Hudson Hornet

A well-appointed easy-riding car of ample power. Depreciation (loss of turn-in value) is likely to be high.

B+ (Tentative)

Hudson Hornet. $2820 delivered Pa. Radio, $100; heater, $74; automatic transmission, $178; overdrive, $111; *Twin H-Power* carburetors, $86; power steering, $150; power brakes, $43.

CR'S FINDINGS ON ROAD TESTS

Acceleration times: in direct drive (4.09 to 1 rear axle ratio)—from 20 to 50 m.p.h., 10.7 sec. (good), from 40 to 60 m.p.h., 7.9 sec. (very good); in overdrive—from 20 to 50 m.p.h., 16.9 sec., from 40 to 60 m.p.h., 14.0 sec.

Gasoline mileage under test conditions:[1] at 30 m.p.h., 15.2 m.p.g. in direct drive, 18 m.p.g. in overdrive; at 50 m.p.h., 13.3 m.p.g. in direct drive, 16.4 m.p.g. in overdrive. Not as good as last year's overdrive-

[1] These are not the same figures as miles per gallon under average road conditions; however, the figure for gasoline consumption at 50 m.p.h., if multiplied by 0.8 or 0.9 will often be close to that obtained in normal driving of an automobile.

[2] A measure not of braking ability, but of brake life expectancy.

equipped car with standard (single) carburetor which gave 18.5 m.p.g. in overdrive at 50 m.p.h.

Riding comfort on rough roads at both low and moderate speeds was very good. General behavior on the road and cornering ability at high speeds were excellent. Steering was precise, and the power steering required enough initial steering wheel effort to give the driver a satisfactory sense of control over the car; steering ratio, high (slow response requiring a large number of turns of steering wheel). With the engine stalled, the steering effort required was no greater than that of the same car without power steering. There was adequate head and leg room, and width of seats was ample for three persons in each seat.

Speedometer errors: at indicated speed of 20 m.p.h., actual speed was 19.9 m.p.h.; at 35 m.p.h., 34.1; at 50 m.p.h., 49.5; at 60 m.p.h., 59.5. **Odometer** was approximately correct.

Equipment on car tested: Radio, heater, overdrive, power steering, power brakes, *Twin H-Power* carburetors, vacuum booster, 4.09 to 1 rear axle ratio.

OBSERVATIONS AND CONCLUSIONS

Following the general trend, rated brake horsepower has been increased from 145 at 3800 rpm. to 160 at 3800 rpm. (170 with *Twin H-Power* carburetors), and the compression ratio increased from 7.2 to 1 to 7.5 to 1. When the car was operated in overdrive, engine noises were higher than was to be expected, considering the relatively low ratio of engine to car speed. Power brakes operated smoothly, but required more pedal pressure than most power brakes. With a stalled engine, and clutch disengaged, the vacuum reserve tank permitted one assisted application of the brakes; after that the brakes could still be applied by conventional hydraulic action, but with considerable effort. The conventional brakes of a *Hudson Hornet* still permit direct mechanical application of the brakes when hydraulic system fails (very desirable). This is not the case with the car having power-assisted brakes, and this is a disadvantage. ¶Fresh-air intake located on top of the cowl, very desirable. The heater was easy to control and gave adequate heat. Vision to the front and rear, good. Used warning lights in place of ammeter and pressure gauge (undesirable; see *Nash Statesman*, March 1954 BULLETIN). As with last year's car, engine did not operate smoothly at low speed. Dash covered with plastic material to eliminate reflections, but there were some reflections in windshield from chrome on steering column.

HUDSON HORNET SPECIFICATIONS

Engine

6 cylinders, "L" head
Bore, 3.8125 in., stroke, 4.5 in.
Piston displacement: 308 cu. in.
Brake horsepower (rated): 160 at 3800 rpm. (170 at 4000 rpm. with twin carburetors)
Taxable horsepower: 34.88
Compression ratio: 7.5 to 1
Cylinder head: aluminum
Automatic choke
Crankcase oil capacity: 7 qt.
Cooling system (pressure type): 19-1/2 qt. with heater

Chassis, etc.

Wheelbase: 123.9 in.
Over-all length: 209 in.
Width: 77.6 in.
Height: 60.4 in.
Gear ratio: 4.09 to 1 (4.55 to 1 optional, 3.07 to 1 with Hydra-Matic)
Engine revolutions per mile: 3030 (2270 with Hydra-Matic)
Tires: 7.10 x 15 (overloaded), 7.60 x 15 optional (adeq...)
Brake area: 159 sq. in.
Brake factor:[3] 36 (somewhat low)
Frame: Unit step-down type
Minimum road clearance: 6-3/4 in.
Turning diameter: 43 ft. 10 in.
Front shoulder room: 62 in.
Rear shoulder room: 58 in.
Steering factor: 5.5 (high)

Other details

Battery: 6-volt 100-amp.-hr.
Gasoline tank: 20 gal.
Windshield wipers: vacuum type
Shipping weight: 3620 lb.
Curb weight of car tested: 4090 lb., 54.5% on front (about average)

Nash Rambler Custom

The Rambler cannot be classed as an economy car (except as to miles per gallon of gasoline). For those who have need for a "second car" and can afford the Rambler's relatively high price, it would seem to be a desirable purchase. For those whose interest is in getting the most car for the money in the $2000 price bracket, the Nash, in CR's opinion, would not be so desirable.

B+ (Tentative)

Nash Rambler Custom. $2055 delivered N.J. Radio, $76; heater, $74; *Hydra-Matic*, $179; reclining seat and bed, $18.45.

CR'S FINDINGS ON ROAD TESTS

Acceleration times from 0 to 30 m.p.h., 6.4 sec., good; from 20 to 50 m.p.h., 14.1 sec., below average; from 40 to 60 m.p.h., 15 sec., below average.

Gasoline mileage under test conditions:[1] at 30 m.p.h., 26.7 m.p.g.; at 50 m.p.h., 22 m.p.g., good.

Riding comfort was good, particularly for a short-wheelbase car, at all speeds and on all types of roads. Cornering ability was good. Steering was somewhat hard; the turning radius was very large for a small car, making the car difficult to park. The interior space was adequate for four people, but three adults in the front seat would be definitely crowded. The narrow and low door openings made entering the car difficult for a moderately tall or large person.

Speedometer errors were unduly large: at indicated speed of 20 m.p.h., actual speed was 17.7 m.p.h.; at 35 m.p.h., 31.8; at 50 m.p.h., 45.4. **Odometer**

[1]These are not the same figures as miles per gallon under average road conditions; however, the figure for gasoline consumption at 50 m.p.h., if multiplied by 0.8 or 0.9 will often be close to that obtained in normal driving of an automobile.
[3]A measure not of braking ability, but of brake life expectancy.

NASH RAMBLER CUSTOM SPECIFICATIONS

Engine

6 cylinders, "L" head
Bore, 3-1/8 in.; stroke, 4-1/4 in.
Piston displacement: 196 cu. in.
Brake horsepower (rated): 90 at 3800 rpm.
Taxable horsepower: 23.44
Compression ratio: 7.3 to 1
Cylinder head: cast iron
Automatic choke
Crankcase oil capacity: 4 qt.
Oil filter: partial-flow type available as extra
Cooling system (pressure type): 12 qt. with heater

Chassis, etc.

Wheelbase: 108 in.
Over-all length: 193-1/2 in.
Width: 73-1/2 in.
Height: 59-1/2 in.
Gear ratio: 3.77 to 1 (3.3 to 1 with Hydra-Matic)
Engine revolutions per mile: 2900 (2530 with Hydra-Matic)
Tires: 6.40 x 15 (adequate)
Brake area: 104 sq. in.
Brake factor:[3] 32 (low)
Frame: unit type with body
Minimum road clearance: 6-7/8 in.
Turning diameter: 42 ft. 2 in.
Front shoulder room: 52-1/2 in.
Rear shoulder room: 52-1/4 in.
Steering factor: 3.4

Other details

Battery: 6-volt 100-amp.-hr.
Gasoline tank: 20 gal.
Windshield wipers: vacuum type
Shipping weight: 2650 lb.
Curb weight of car tested: 2933 lb., 53.5% on front

was incorrect by the unusual amount of about 8% (100 miles would be recorded as 108 miles).

Equipment on car tested: Radio, heater, *Hydra-Matic* drive.

[3] A measure not of braking ability, but of brake life expectancy.

OBSERVATIONS AND CONCLUSIONS

This is the first year the *Rambler* has been available in a four-door sedan model. This has been accomplished by increasing the wheelbase and over-all length by 8 in. The rear door is about 7 in. narrower than that of a standard-size car, and the front door 3½ in. narrower. The rated horsepower has been increased from 85 at 3800 rpm. to 90 at 3800 rpm. and while, with *Hydra-Matic* drive, the car has good acceleration in the 0 to 30 m.p.h. range, it was below average in the 20 to 50 and 40 to 60 m.p.h. ranges. The trunk space has been increased, partly by the increase in wheelbase and partly by the outside mounting of the spare tire. Trunk space is still, however, on the small side, and the position of the spare tire makes difficult the loading of the trunk with a large or heavy parcel. ¶The fresh-air intake is located on the cowl (very desirable). The heater worked well and was simple to operate. There was some reflection in the windshield from the chrome around the steering wheel hub and the lighted quadrant of *Hydra-Matic* drive (switch controlling this light and instrument lighting was on-off type; there was no provision for dimming instrument and selector lever-quadrant lights). The instruments were well arranged. Vision toward the front, good; to the rear, satisfactory (would be better with larger rear-view mirror).

* * *

Automobile Prices

At the time this report was written, list prices of new automobiles were holding firm, but with dealers' stocks of new and used cars high and production of many makes continuing at a high level, there are indications that manufacturers will have to reduce prices. Many dealers are already doing this, in effect, by offering discounts (15 to 25 percent) or by abnormally high trade-in allowances.

Variation in Properties of Tires

RECENT INFORMATION from the Highway Transport Research Branch of the U. S. Bureau of Public Roads indicates that different automobile tires of the same manufacturer may vary widely in coefficient of friction against the road. It is this coefficient which determines stopping power when the wheels are locked or nearly so, and also determines the tendency to resist skidding and side-slipping under bad driving conditions. The frictional resistance of the tire may vary over the wide range of 30 percent. This could account for some of the skid problems encountered by consumers, for a marked difference between the frictional reaction of the tire on one side of the car and that on the other could start a skid, under treacherous road conditions. Possibly the consumer of the future will have to buy his tires "matched for friction" unless the manufacturers find a way to reduce the variations in frictional resistance from one tire to another.

It is also desirable that the tires on opposite sides of a car should be of the same age, approximately. Fresh tires are best since with aging of a tire there is a reduction of the coefficient of friction; obviously the presence of tires of widely different age on opposite wheels may tend to permit the beginning of a skid where otherwise the car would be driven safely in a given situation.

Off the Editor's Chest

(Continued from page 2)

public press as enforcing "fair trade prices" are General Electric; Sunbeam; John Oster Manufacturing Co.; General Mills, Inc.; Dormeyer Corp.; Johnson & Johnson; Helena Rubenstein; Westinghouse; Benrus Watch Co.; Bulova Watch Co.; Speidel Corp.; and Sterling Drug.

At a time when there are many more products available than customers, it is obvious that enterprising merchants who believe in competition in retail trade will make an effort to supply consumers with what they want at a price they are willing to pay. Despite fair trade laws and court actions, the business of discount houses is likely to expand in the immediate future, a trend very noticeable lately in the New York City area. As one shrewd director of merchandising of a New York advertising agency pointed out, the discount house "cannot be legislated out of existence because it satisfactorily serves a substantial and growing segment of our shopping public. . . its very growth will compel other marketing factors to turn to new concepts instead of renewed lamentations in order to combat its inroads."

As CR has frequently pointed out, a most important factor to take into consideration in purchasing a large household appliance or one that involves considerable expenditure is good servicing and efficient installation. The discount houses do not as a rule make any pretense of providing such service, and the thrifty purchaser who fails to check what is available in his own locality on these two points may find himself paying an over-all higher price than if he had bought the appliance to be installed and serviced from a local dealer who sells at "standard prices." On the other hand, the problem of finding a good serviceman in any line is a difficult one, as many consumers have found out to their sorrow, whether they buy an appliance from a local, authorized dealer or from a discount house. Thus, in some cities and towns, one may do about as well with a cut-price appliance as with one for which full list price was paid, so far as availability and cost of servicing is concerned.

Instead of expending funds for lawyers and court action in enforcing the so-called fair trade laws, appliance manufacturers would do well to set up an effective system of training authorized servicemen wherever their products are sold in any considerable number and should try to give them a sense of responsibility for careful work and reasonable prices for their service. Likewise local dealers who are known for the promptness and effectiveness of their service need not fear the competition of discount houses.

Consumers should recognize that dealing with discount houses involves some risk. On the other hand, if they are good comparison shoppers and weigh carefully the disadvantages involved in buying a cut-price item, they will undoubtedly be able to save themselves some money—perhaps not with a net gain on every purchase, but on the average. It is often helpful to check with a local Better Business Bureau on a discount house since some have been guilty of shady practices and have been the subject of justifiable criticism by the more reputable business firms in the community. This information will be available in the Better Business Bureau's files and if the dealer has a bad record, the fact will be mentioned to consumers who make inquiry.

It is important to bear in mind that discount houses do very little business on credit, and only a minority will accept returned goods, whether defective or not. Some do sell appliances with a manufacturer's warranty that guarantees replacement of defective articles. On some items, of course, there is little risk involved of the failure of a product, such as jewelry and silver, or a small radio of well-known brand in its original sealed package. In New York City, for example, it has been estimated that 60 percent of all sterling silver flatware is sold by discount houses, and there are many dealers who offer television sets, radio sets, and cameras at substantial discounts.

One enterprising appliance dealer in Minneapolis, George B. Johnston, competes effectively with discount houses by offering substantial trade-in allowances on used appliances, in the purchase of new ones. According to an interview with Mr. Johnston in the Electrical Dealer, February 1954, trade-ins help him get list prices on new refrigerators and often enable him to sell a higher-priced model than the prospective customer would buy without a trade-in. His floor salesmen are coached to sell a new refrigerator first and then dicker for the trade-in. He prefers refrigerators made in 1940 or 1941 on which the buyer thinks he has used up his investment so that he looks upon the allowance as clear gain. The appliance, however, is still one on which Mr. Johnston can realize a good resale price when it has been cleaned up, refinished, and put into good working order. It appears

from the picture of Mr. Johnston's activities that his practice is to "trade up" so that the consumer buys a higher-priced refrigerator than he might otherwise be inclined to get, because the difference between the list price and the trade-in allowance seems to make the purchase a bargain.

Consumers' Research holds no brief for any particular type of distribution whether it be the conventional retail store, mail-order house, supermarket, discount house, or cooperative. The function of distribution is to make available to consumers the products that they want at the prices they are willing to pay, and merchants who do that best and at lowest cost to the consumer should get the business. It was not possible during the times of scarcity of World War II and the attempts by the government to control prices and distribution to keep some people from paying to get many products, such as butter and *Kleenex*, whatever price it took to obtain them. It is likewise futile for manufacturers and distributors to try to hold the prices up to what the least efficient firms in the distribution setup would like to have charged to provide an umbrella to assure their profits. It is obvious even when business is slow and the retail market is apparently glutted with products that consumers will buy freely if the price is attractive. The rapid rise of discount houses indicates that there are merchants who will cater to their desires, so long as it pays to do so.

As a speaker at an economic conference pointed out early this year, we are experiencing one of the most curious recessions in history, with wages still rising and prices not declining. It is just possible that he has in this comment put his finger on the cause of the present widespread disinclination of consumers to buy.

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†indicates that listings of names or brands are included.

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines — some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, Cue, Daily News (N.Y.), *The Exhibitor, The Farm Journal, Films in Review, Harrison's Reports, Joint Estimates of Current Motion Pictures, Motion Picture Herald, National Legion of Decency, Newsweek, New York Herald Tribune, New York Times, New York World Telegram & Sun, Parents' Magazine, Release of the D. A. R. Preview Committee, Reviews and Ratings* by the Protestant Motion Picture Council, *Time, Variety* (weekly).

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), or C (not recommended) on its entertainment values.

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
c—in color (Technicolor, Cinecolor, Trucolor, Magnacolor, Vitacolor, etc.)
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
nov—dramatization of a novel
rom—romance
sci—science fiction
soc—social problem drama
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C		
—	8	7	**Act of Love**	*war-dr A*
—	4	10	**Alaska Seas**	*mel A*
1	9	4	**All the Brothers Were Valiant**	*adv-c A*
—	3	1	**Always a Bride (British)**	*com A*
—	1	4	**Anita Garibaldi (Italian)**	*hist-dr A*
2	5	4	**Annapurna**	*doc-c A*
—	1	12	**Appointment in Honduras**	*mel-c A*
—	5	1	**April 1, 2000 (Austrian)**	*fan A*
—	3	10	**Bad for Each Other**	*dr A*
—	3	10	**Bait**	*mel A*
—	2	3	**Battle of Rogue River**	*mel-c AYC*
—	6	1	**Beachhead**	*war-dr-c A*
—	6	6	**Beat the Devil**	*cri-dr A*
—	3	4	**Beauties of the Night (French)**	*dr A*
4	11	4	**Beggar's Opera, The (British)**	*mus-dr-c A*
—	12	5	**Beneath the 12-Mile Reef**	*mel-c A*
—	5	6	**Bigamist, The**	*dr A*
—	4	1	**Bitter Creek**	*wes AYC*
—	4	6	**Border River**	*mel-c A*
—	4	12	**Botany Bay**	*adv-c A*
—	9	3	**Both Sides of the Law (British)**	*cri-mel A*
—	8	2	**Boy from Oklahoma, The**	*wes-c AYC*
2	6	4	**Calamity Jane**	*mus-wes-c AYC*
—	1	6	**Captain John Smith and Pocahontas**	*hist-dr-c A*
—	—	5	**Captain Scarlett**	*adv-c AY*
1	2	2	**Casanova's Big Night**	*com-c A*
—	2	3	**Cat-Women of the Moon**	*sci A*
4	9	2	**Cease Fire**	*war-dr AY*
—	—	6	**Charge of the Lancers**	*mel-c A*
—	—	—	**City is Dark, The (see Crime Wave)**	
—	3	5	**Combat Squad**	*war-mel AYC*
—	14	2	**Command, The**	*wes-c AYC*
7	5	—	**Conquest of Everest, The (British)**	*doc-c AY*
1	4	—	**Cowboy, The**	*wes-doc-c AYC*
—	11	2	**Crazylegs, All-American**	*dr AYC*
—	4	1	**Creature from the Black Lagoon**	*sci AY*
—	12	3	**Crime Wave**	*cri-mel A*
—	4	5	**Dangerous Mission**	*cri-mel-c AY*
1	9	7	**Decameron Nights (British)**	*rom-c A*
—	1	2	**Destination Matrimony (Italian)**	*com A*
—	4	9	**Donovan's Brain**	*sci-mel A*
—	3	2	**Dragonfly Squadron**	*war-dr A*
—	—	8	**Dragon's Gold**	*mel AYC*
—	2	3	**Drive a Crooked Road**	*mel A*
—	2	5	**Drums of Tahiti**	*mel-c A*
—	2	8	**Duffy of San Quentin**	*soc-dr A*
1	9	3	**Easy to Love**	*mus-com-c A*
1	7	6	**Eddie Cantor Story, The**	*mus-biog-c AYC*
—	1	6	**El Alamein**	*war-mel AYC*
—	3	4	**El Paso Stampede**	*wes AYC*
1	13	1	**Escape from Fort Bravo**	*mel-c AYC*
2	4	1	**Executive Suite**	*nov A*
—	1	6	**Fake, The**	*mel A*
—	2	2	**Fangs of the Wild**	*mel A*
—	5	—	**Fighter Attack**	*war-dr-c AY*
—	2	1	**Fighting Lawman, The**	*mel AYC*
—	9	1	**Final Test, The (British)**	*com AYC*
—	4	5	**Flight Nurse**	*war-dr AYC*
—	2	12	**Flight to Tangier**	*cri-mel-c A*
—	2	5	**Folly to be Wise (British)**	*com A*
—	5	9	**Forbidden**	*cri-mel A*
—	3	4	**French Line, The**	*mus-dr-c A*
—	—	4	**Fugitive in Trieste (Italian)**	*dr A*
—	—	5	**Gay Adventure, The (British)**	*dr A*
3	13	—	**Genevieve (British)**	*com-c A*
—	2	3	**Genoese Dragnet (Italian)**	*mel A*
—	3	3	**Geraldine**	*mus-com AYC*
—	—	—	**Gilbert and Sullivan (see Story of)**	
—	5	5	**Give a Girl a Break**	*mus-com-c AY*
—	13	4	**Glass Webb, The**	*mys-mel A*
8	8	1	**Glenn Miller Story, The**	*mus-biog-c AYC*
—	10	2	**Go, Man, Go**	*dr AYC*
1	7	3	**Golden Coach, The (Italian)**	*dr-c A*
—	6	3	**Golden Mask, The**	*adv-c A*
—	3	2	**Grapes Are Ripe, The (German)**	*com AYC*
—	2	8	**Great Diamond Robbery, The**	*cri-com AYC*
—	2	10	**Greatest Love, The (Italian)**	*dr A*
—	3	3	**Guilt is My Shadow (British)**	*mys-mel A*
1	4	3	**Gun Fury**	*wes-c A*
2	8	—	**Gypsy Colt**	*dr-c AYC*
2	11	1	**Heidi (Swiss)**	*dr AYC*
1	5	4	**Hell and High Water**	*war-dr-c AYC*
—	1	9	**Hell's Half Acre**	*mel A*
—	7	6	**Here Come the Girls**	*mus-com-c A*
—	2	7	**Highway Dragnet**	*cri-mel A*

A	B	C		
—	1	4	**His Last 12 Hours (Italian)**	*dr A*
1	10	2	**His Majesty O'Keefe**	*adv-c AY*
1	8	1	**Holly and the Ivy, The (British)**	*dr A*
8	7	—	**Hondo**	*wes-c AY*
—	9	2	**Horse's Mouth, The (British)**	*com AYC*
—	3	2	**Hot News**	*mel A*
8	7	2	**How to Marry a Millionaire**	*com-c A*
—	2	7	**Intimate Relations (British)**	*soc-dr A*
4	12	1	**It Should Happen to You**	*com A*
1	3	8	**Jack Slade**	*wes A*
—	2	4	**Jennifer**	*mys-dr A*
—	2	6	**Jesse James vs. the Daltons**	*mel-c A*
—	2	7	**Jivaro**	*adv-c A*
2	12	2	**Joe Louis Story, The**	*biog AY*
—	3	2	**Journey to Love (Italian)**	*com A*
—	4	5	**Jubilee Trail**	*wes-c A*
—	—	8	**Killer Ape, The**	*mel AYC*
—	—	5	**Killers from Space**	*sci AY*
1	10	3	**King of the Khyber Rifles**	*mel-c AYC*
10	4	3	**Kiss Me Kate**	*mus-com-c A*
8	9	2	**Knights of the Round Table**	*adv-c AYC*
—	1	4	**La Favorita (Italian)**	*mus-dr A*
—	2	4	**La Lupa (Italian)**	*dr A*
—	2	3	**La Ronde**	*dr A*
—	1	4	**Last of the Pony Riders**	*mus-wes AYC*
—	1	4	**Limping Man, The**	*mys-mel A*
5	8	—	**Little Fugitive, The**	*dr A*
10	6	—	**Living Desert, The**	*doc-c AYC*
2	11	4	**Long, Long Trailer, The**	*mus-com-c AYC*
—	4	2	**Loophole**	*mys-mel A*
—	3	4	**Louisiana Territory**	*trav-c AY*
—	—	4	**Lucky Five, The (Italian)**	*dr A*
—	1	5	**Lure of the Sila (Italian)**	*mel A*
—	4	1	**Ma and Pa Kettle at Home**	*com AYC*
—	—	3	**Make Haste to Live**	*cri-mel A*
2	8	4	**Man Between, The (British)**	*war-mel A*
—	1	8	**Man Crazy**	*soc-dr A*
—	1	7	**Man from Cairo, The**	*mel A*
—	—	5	**Man in Hiding (British)**	*mys-mel A*
—	10	5	**Man in the Attic**	*cri-dr A*
—	2	4	**Man of Conflict**	*dr AY*
—	1	2	**Mexican Manhunt**	*mel AY*
—	1	5	**Miss Robin Crusoe**	*dr-c A*
2	5	8	**Miss Sadie Thompson**	*mel-c A*
—	2	1	**Mistress of the Mountains (Italian)**	*dr A*
1	3	9	**Money from Home**	*com-c AY*
—	—	3	**Monsoon**	*mel A*
—	10	1	**Murder on Monday (British)**	*cri-mel AY*
—	3	2	**My Heart Sings (Italian)**	*mus-dr A*
—	5	2	**Naked Jungle, The**	*dr-c A*
—	1	8	**Nebraskan, The**	*wes-c A*
2	6	4	**New Faces**	*mus-com-c A*
2	7	—	**Night People**	*mys-mel-c A*
1	3	1	**Othello**	*dr A*
—	6	3	**Overcoat, The (Italian)**	*dr A*
—	2	4	**Overland Pacific**	*wes-c A*
—	7	5	**Paratrooper**	*war-dr-c AY*
—	—	9	**Paris Model**	*dr A*
—	1	4	**Paris Playboys**	*com AYC*
—	1	7	**Passionate Sentry, The (British)**	*com A*
2	5	3	**Personal Affair (British)**	*mel A*
—	5	3	**Phantom of the Rue Morgue**	*cri-mel-c A*
3	4	2	**Pickwick Papers, The (British)**	*dr AYC*
—	—	3	**Pleasure Garden, The (British)**	*fan A*
—	1	9	**Prisoners of the Casbah**	*adv-c A*
—	4	8	**Project M-7 (British)**	*war-dr AY*
—	—	5	**Project Moonbase**	*sci AY*
—	2	7	**Queen of Sheba (Italian)**	*dr A*
—	5	1	**Queen's Royal Tour, A (British)**	*doc-c AYC*
—	3	—	**Rails into Laramie**	*wes-c A*
1	7	4	**Red Garters**	*mus-wes-c A*
—	3	3	**Red River Shore**	*wes AYC*
2	4	7	**Rhapsody**	*mus-dr-c A*
1	7	1	**Ride Clear of Diablo**	*wes-c A*
2	6	4	**Riders to the Stars**	*sci-mel-c AYC*
—	2	2	**Riding Shotgun**	*wes-c AYC*
2	13	—	**Riot in Cell Block 11**	*soc-mel A*
3	10	1	**Rob Roy**	*adv-c AYC*
1	2	3	**Rose Marie**	*mus-dr-c AYC*
—	1	4	**Royal African Rifles, The**	*war-mel-c A*
1	4	9	**Saadia**	*mel-c AY*
—	3	—	**Saint's Girl Friday, The**	*mys-mel A*
—	2	6	**Salt of the Earth**	*propaganda-soc-dr A*
—	7	6	**Saskatchewan**	*mel-c A*
—	1	2	**Scarlet Spear, The**	*mel-c A*
—	7	2	**Sea of Lost Ships**	*dr AYC*
—	1	3	**Shadow Man**	*mys-mel A*
—	2	2	**Shadows of Tombstone**	*wes AYC*
—	1	6	**Shark River**	*mel-c A*
—	7	5	**She Couldn't Say No**	*com A*
—	2	8	**Sins of Jezebel**	*dr-c A*
2	6	7	**So Big**	*dr AY*
—	6	3	**Song of the Land**	*doc-c AYC*
1	5	2	**Spice of Life (French)**	*com A*
—	3	5	**Steel Lady, The**	*mel AYC*
—	4	—	**Stormy, the Thoroughbred**	*doc-c AYC*
7	5	2	**Story of Gilbert and Sullivan (British)**	*mus-biog-c AYC*
—	3	8	**Stranger on the Prowl**	*propaganda-dr A*
2	8	1	**Tanga Tika**	*dr-c A*
—	5	3	**Taza**	*mel-c AYC*
—	7	3	**Tennessee Champ**	*com-c A*
—	1	3	**Terror Street (British)**	*cri-mel A*
—	1	2	**Texas Bad Man**	*mel AYC*
—	3	10	**Three Sailors and a Girl**	*mus-com-c A*
—	2	7	**Three Young Texans**	*mel-c A*
—	5	6	**Thunder Over the Plains**	*mel-c AYC*
—	4	4	**Time, Gentlemen, Please! (British)**	*com A*
2	12	1	**Titfield Thunderbolt (British)**	*com-c AYC*
—	9	3	**Top Banana**	*mus-com-c A*
—	11	3	**Torch Song**	*dr-c A*
—	4	7	**Trent's Last Case (British)**	*cri-mel A*
1	8	1	**Tumbleweed**	*wes-c AYC*
—	4	4	**Turn the Key Softly (British)**	*dr A*
—	—	5	**Undercover Agent (British)**	*mel A*
—	1	2	**Unknown Lover, The (Italian)**	*dr A*
—	1	9	**Veils of Bagdad, The**	*fan-c A*
—	—	6	**Violated**	*cri-mel A*
—	7	10	**Walking My Baby Back Home**	*mus-com-c A*
—	3	5	**War Arrow**	*war-mel-c AY*
—	1	4	**White Fire (British)**	*mel A*
—	2	2	**White Hell of Pitz Palu, The**	*dr A*
2	4	—	**White Mane**	*dr A*
—	2	8	**Wicked Woman**	*dr A*
—	4	12	**Wild One, The**	*mel A*
—	1	4	**World for Ransom**	*mel AY*
—	4	1	**Yankee Pasha**	*adv-c A*
—	2	2	**Yellow Balloon (British)**	*cri-mel A*
—	8	4	**Yesterday and Today**	*dr AYC*

The Consumers' Observation Post

(Continued from page 4)

without charge from the duPont Company: Buying Fabrics for Colorfastness, and Testing for Colorfastness in the Home. For either, write the Public Relations Department, attention of Harlan L. P. Wendell, E. I. duPont de Nemours & Co., Wilmington 98, Del.

* * *

THE NEW ELECTRIC VAPORIZING DEVICES for killing insects are being used not only in homes but in continual operation in food handling establishments as well. The insecticide that is commonly dispersed is lindane. Investigations by the Council on Pharmacy and Chemistry of the American Medical Association have shown that a number of ill-effects on human beings have been reported from lindane including skin sensitivity, and other allergic symptoms, irritation to the eyes and respiratory tract, nausea, and more severe ailments such as polyneuritis, anemia, and asthma. The Council not only reports that there have been a number of cases of injury from the use of lindane-vaporizing devices, but calls attention to dangers inherent in the misuse of insecticide vaporizers as fumigators.

* * *

SWISS WATCHES IMPORTED INTO THIS COUNTRY already assembled carry a higher tariff rate than parts which are to be assembled or cased in this country. The Reciprocal Trade Agreement stipulates that for each adjustment to a foreign watch after it leaves the assembly line 50 cents is added to the $2.10 base tariff. Up till now, reports Fortune magazine, Swiss watches have been considered "unadjusted" but by redefining the term the Treasury could effectively raise the tariff on watches more than 100 percent and, of course, correspondingly increase the price to the consumer. Three U. S. companies which import Swiss jeweled movements are Bulova, Benrus, and Gruen, samples of which were found to be good or fairly good time-

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In these days when it is important to make every dollar do double duty, the wise consumer will use the scientist's approach in making a choice among the many brands competing for his favor, taking advantage of expert knowledge and information wherever available on every sort of household purchase. CR's ratings of products by brand name have been found by many who have used them to be an indispensable aid in making their purchasing dollars go as far as possible and in getting as good products as the market offers. Each month Consumers' Research Bulletin presents effective, money-saving information about products rated by brand name on the basis of scientific tests and expert examination. Then in September, the big CR Annual Bulletin summarizing much of the previously issued product information, carefully indexed for ready reference, provides what many people call their "handbook of buying."

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pieces in CR's recent tests. Swiss watchmakers are currently under fire for effectively undercutting prices of U. S. competitors, according to a Tariff Commission complaint on one hand, and they are under fire from the Justice Department for monopoly practices, presumably for overpricing. Whatever economic ends these two contradictory actions are designed to achieve for certain sections of American industry, they cannot in any conceivable fashion benefit the American consumer; such economic pulling and hauling is not a proper use of taxpayers' money by the federal government.

* * *

IF YOU'RE PLANNING A SUMMER VACATION BY AUTOMOBILE it will be wise to bear in mind certain safety precautions. One of the many causes of accidents, according to three University of California researchers in a report for the Highway Research Board, is setting a day's driving goal too high, then in order to make the scheduled destination, speeding up at the end of a day's journey and taking chances, to make up time. "Road hypnosis" induced by monotonous driving was held to be a factor in accidents. In driving through mountainous regions, decreased oxygen and high altitudes may affect the driver so that he does not respond properly to highway conditions. Another factor that the scientists believe has caused highway tragedies was a reluctance to change plans when new and unforeseen conditions, such as snow or ice, were encountered on the trip. Remember, an automobile trip is not like keeping a train schedule. You don't have to reach your destination at a scheduled time and you don't have to reach the particular destination you had in mind when you started out. It's better to be safe than sorry by adjusting your plans to the necessities of the road and the weather.

* * *

"CONSUMER PROTECTION" is the title of a one-reel film put out by Coronet Films (Coronet Building, Chicago 1). It is an effective introduction for high school classes in wise buying, consumership, or consumer economics, simply and interestingly presented. Primarily it deals with factors involved in making a choice and evaluating a product before making a final purchase. It would be advantageously viewed more than once, however, since much information is presented, and the relationships of the various points to be considered are not fully perceived on first viewing. Information about the film may be obtained from Coronet which has the prints for sale. Rental bookings may be made from various 16 mm. film rental sources in various sections of the country.

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Phonograph Records

BY WALTER F. GRUENINGER

Please Note: The first symbol applies to quality of interpretation, the second to fidelity of recording.

PLYMOUTH RECORDS sell in one-to-a-city stores at 99 cents for each 12-inch LP disk. I have heard a dozen of them, principally standard works. Surfaces are audible but not noisy. Performance and fidelity rate from B- B downward, never matching the best items available. Most enjoyable of those heard are Puccini's *La Bohème* (complete on 3 records, with libretto, $3.96) and Tchaikovsky's *Romeo and Juliet*. If you have a mind to experiment, I suggest a small initial purchase of Plymouth Records to make sure they are worth 99 cents to you.

THE 18 TOP HITS CLUB, Harrison, N.J., advertises a membership record plan of 18 popular tunes on 3 disks for $2.98, plus 25 cents for postage and handling. The 3 disks purchased offered recommended performances and recording on 10-inch 78 rpm. disks (also available on 45 rpm. disks). Generally, each record presented a vocal chorus of 6 tunes such as *Stranger in Paradise, Changing Partners, Heart of My Heart*, etc. Playing time per side, about 6½ minutes. Four surfaces were quiet, two swished. Write the Club for details.

* * *

Beethoven: *Missa Solemnis*. Marshall, Conley, Merriman, Hines, etc., with the NBC Symphony Orchestra and Robert Shaw Chorale under Toscanini. 4 sides, RCA Victor LM 6013. $11.44. Definitive reading of a work not often understood. The orchestra, chorus, Merriman, and Hines are outstanding; Marshall and Conley less so. Balance between instruments and voices not always good. **A A**

Beethoven: *Piano Concerto No. 1*. Steurer with the Symphony Orchestra, Radio Leipzig, under Pflüger & **Mendelssohn:** *Piano Concerto No. 1*. Roloff with the Symphony Orchestra, Radio Berlin, under Rucht. Urania RS 7-23. $3.50. Ingratiating, joyous concerti played adequately. A lot for the money here, though Wiedrer on new Vox PL 8400 is a more forceful soloist in the Beethoven and is better recorded. **A A**

Beethoven: *Symphony No. 5*. Concertgebouw Orchestra under Kleiber. London LL 912. $5.95. Nineteen "Fifths" now appear in the Schwann catalog. This one is suitably dynamic most of the time, but it sags occasionally. Excellent recording. Overall, among the best of the "Fifths." **A AA**

Bizet: *Carmen*. Kostelanetz and His Orchestra. Columbia ML 4826. $5.95. This will fill the bill if you prefer opera played by an orchestra, which is not what the composer intended. Much of the purely orchestral part of the score, however, is included. **A AA**

Brahms: *Four Symphonies*. NBC Symphony Orchestra under Toscanini. 6 sides, RCA Victor Limited Edition Album, $24.95. All of Brahms' symphonies. Victor has packaged the set lavishly, perhaps on the theory that Brahms and Toscanini deserve to *look* as good as they *sound*. The performance is appropriately mellow, yet paced just right; dramatic, yet shaded with the care few other conductors take. Well recorded, though there's an annoying swish in the third movement of *Symphony No. 2* in the pressing I purchased, delivered in a factory sealed carton. And there's an awkward mid-first movement interruption in the music between sides of this same symphony. . . . I heard no swish, no interruption, merely elegant sound, beautifully reproduced, of *Symphony No. 2* played by the Philadelphians under Ormandy on Columbia ML 4827. **AA A**

Charpentier: *Mass and Symphony "Assumpta Est Maria."* Angelici, Michel, Giraudeau, Choir of Jeunesses Musicales de France with Orchestra under Martini. Vox PL 8440. $5.95. An extraordinarily beautiful work, beautifully sung and very well recorded. **AA AA**

Chopin: *Mazurkas* (5 sides) and *Andante, Polonaise* (1 side). Rubinstein (piano). RCA Victor LM 6109. $17.16. The complete *Mazurkas* recorded for the second time by this pianist (once on 78's) and played now with less rubato, more grace, and rhythmic accent. The beginning of side 5 swishes. . . . Certainly the performance rates higher than that of Dortmann doing the *Chopin Waltzes* on RCA Victor LBC 1050 ($2.98). **AA A**

Enesco: *Roumanian Rhapsodies, Nos. 1 and 2*. Stokowski and His Symphony Orchestra. RCA Victor LRM 7043. $2.99. Delightful, popular works based on folk melodies. Stokowski at his best. **AA AA**

Friml and Stothart: *Rose Marie*. Blyth, Keel, Lamas, etc. MGM E 229. $3. Recorded directly from the sound track of the new movie which introduces tunes not in the original *Rose Marie* and leaves out others. Howard Keel as the Mountie sings best but this group does not measure up to the other artists who have recorded *Rose Marie*. **B B**

Lehar: *The Land of Smiles*. Schwarzkopf, Kunz, Gedda, etc., under Ackermann. 4 sides, Angel Set 3507B. $11.90. The music is almost as enchanting as this composer's *Merry Widow*. Featured song: "Dein ist mein ganzes Herz." **AA AA**

Mozart: *Requiem* (K 626). Laszlo, Roessel-Majdan, Akademie Kammerchor, Vienna State Opera Orchestra, etc., under Scherchen. Westminster WL 5233. $5.95. Dramatic though not definitive performance of the great *Requiem*. Some excesses in tempi. All performers sound as though they are standing in a row, next to the footlights. Lacking depth; wide range, however. **A A**

Tchaikovsky: *Symphony No. 6*. Philharmonia Orchestra under Cantelli. LHMV 1047. $5.95. Top Tchaikovsky very well played and acceptably recorded. **AA A**

von Suppe: *Highlights from Boccaccio*. Roon, Kmentt, Preger, Orchestra and Chorus of the Vienna State Opera under Paulik. Columbia ML 4818. $5.95. First rate performance of a melodious operetta. **AA AA**

Furtwangler Conducts Wagner. Vienna Philharmonic Orchestra. LHMV 1049. $5.95. "Meistersinger Prelude," "Siegfried Idyll," etc. First class playing largely negated by oddish recording. **AA C**

Great New Voices of Today, Vol. 1. Janice Harsanyi (soprano). Period SPL 581. $5.95. In a rich voice, this young American sings 15 outstanding French and German art songs. Her initial record would have rated even higher if the program had been chosen with more contrast in mind and if she had created more mood and emotion in her singing. . . . The same criticism about singing applies to Capitol's record of Grieg and Dvorak songs sung by the soprano, Dorothy Warenskjold. **A AA**

Norwegian Pop Concert. Oslo Philharmonic Orchestra under Fjeldstad. Mercury MG 10150. $4.85. Nine delightful, light vein pieces nearly everybody will enjoy. . . . Its companion release, *Music from Modern Norway* on Mercury MG 10149, calls for more listener concentration. **AA A**

Street of Dreams. MGM Strings and Woodwinds under Holmes with the Voice of Mary Mayo. MGM E3094. $4.85. "Ill Wind," "Dream," "October Twilight," and other light "mood" numbers, mostly slow. Mary Mayo sings vowels only, which may not please all listeners. **A A**

Consumers' Research

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OUR READERS WRITE:

I am a radio and television service man and find CR most helpful in my work. The question asked most often when I go into consumers' homes to repair their sets is, "What is the best set on the market?" I keep a copy of Consumers' Research Bulletin in my kit which I let them read while repairing their set. I explain to them that my wife and I consult Consumers' Research before making any purchase of importance.
Subscriber, Hollywood, Calif.

We want to thank you for your hard work in putting out your wonderful Bulletins. We have read each one from cover to cover and wish we had subscribed long ago.
Homemaker, Banning, Calif.

I am about to purchase a motion picture projector and before doing so would like your advice. My husband, who subscribes to your magazine, just wouldn't make any big purchases without first consulting you.
Homemaker, Forest Hills, N.Y.

Consumers' Research, during the past years, has been the "Bible" for our household. In introducing CR to others via Christmas gifts, I have noticed a continual renewal by most of the recipients. This alone speaks highly of your good work.
Dentist, Auburn Heights, Mich.

Will you kindly send us your latest data on high-fidelity record players. As we intend to take on some new lines, we feel your unbiased reports will help us greatly in our selections. We have been subscribers for many years and certainly enjoy your monthly Bulletins.
Builder, New Bedford, Mass.

We have missed CR Bulletin so much since we allowed our subscription to expire last spring, that I am sending our check for renewal. . . . In our effort to steer our teen-agers away from cheap and futile movie entertainment, your unbiased report on current motion pictures is indispensable. Thank you for such a good parental aid.
Homemaker, Washington, D.C.